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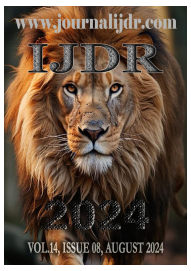


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# ASSESSING EFFECTIVE INTERVENTIONS TO BRIDGE LINGUISTIC GAPS AND IMPROVE HEALTH OUTCOMES FOR IMMIGRANT POPULATIONS: A NARRATIVE REVIEW

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## ABSTRACT

Immigrants currently comprise approximately 281 million people globally. As their populations continue to rise, receiving countries often face difficulties with seamlessly integrating them into society: specifically, with healthcare. This review aims to assess the effectiveness of interventions that aim to bridge the linguistic gaps in immigrant healthcare. It focuses on the four following primary categories: professional medical interpreters, language services (telephone & video), multilingual offline resources, and technological interventions. It was found that medical interpreters have consistently illustrated their positive impact on Limited English Proficient (LEP) patients and healthcare outcomes; however, the primary limitation is their limited availability in the wide variety of languages required and they are often understaffed. Telephone and video services were found to be a potential alternative in place of on-site human resources; however, their quality is more dependent on the specific service and quality of technology. There was limited literature found on multilingual offline resources but it is believed that these could be crucial supplements to live interpreting, especially in areas where technology or skilled human resources are scarce. Finally, technological interventions were found to vary in practicality and effectiveness depending on the service.

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# INTRODUCTION

In an era of increasing global migration, immigrants comprise approximately 3.6% of the global population, amounting to around 281 million (International Organization for Migration, 2020). They play various pivotal roles in society and the economy as students, workers, entrepreneurs, artists, family members, and much more. However, with the relocation comes numerous challenges of integrating into the new country including cultural, linguistic, and societal differences. Approximately 47% of immigrant adults in the U.S. face limited English proficiency (LEP) with 53% reporting that they faced language barriers in a variety of interactions, including healthcare (Rao, 2024). This is a growing issue in healthcare that can cause a myriad of issues: receiving lower-quality care because of miscommunication, resulting in misunderstandings about symptoms, diagnoses, and treatment plans; delays in accessing services due to difficulties navigating medical instructions; a lower utilization of preventative services, resulting in later diagnoses and poorer management of chronic diseases; and an inability to communicate effectively causing increases in anxiety (Kostovich, 2021; Pandey *et al*., 2021; Pillai *et al*., 2023). This negatively impacts patient outcomes and physician-patient relationships. LEP patients often report dissatisfaction with their care and relatively worse healthcare outcomes than their English-proficient counterparts (Pandey *et al*., 2021). It is crucial to employ effective interventions to bridge this linguistic gap.

Currently, to combat this damage, physicians are employing several interventions. The most used is a professional interpreter-- either through the form of an onsite trained professional or a telephone/video service. Other services include multilingual offline resources, translation technologies, community outreach interventions, and hiring bilingual staff. This review aims to evaluate the current strategies in place to bridge linguistic gaps in immigrant populations and offer practical recommendations for implementing the most effective practices.

# METHODOLOGY

The databases PubMed, Google Scholar, National Library of Medicine, Science Direct, and MEDLINE were searched to obtain articles relevant to the linguistic gap in immigrant patients. The following words were searched in different combinations: "bridging linguistic gaps", "immigrant healthcare interventions", "multilingual healthcare", "language barriers", "translation services", "immigrant patient communication", and "healthcare translation services. This review covers articles published from 2010 to 2024. Studies were filtered based on specific inclusion and exclusion criteria. The following inclusion criteria were applied: original study or expert opinion, patients with limited language proficiency, healthcare setting, interventions included one of the following: professionally trained medical interpreter, telephone or video interpreting,

multilingual offline resources of community/cultural training, and technological translations. The following exclusion criteria were applied: systematic or scoping review, immigrants proficient in English or the native language of the study's setting, and unrelated to healthcare barriers. This review analyzes the current landscape, effectiveness, and limitations of four categories of interventions: professional medical interpreters, language services, multilingual services, and technological solutions.

competence is essential for effective communication, as it allows interpreters to navigate complex cultural nuances and facilitate understanding between patients and providers. Effective communication goes beyond language translation. Interpreters must understand cultural nuances to bridge gaps in understanding and ensure that patients feel respected and understood. To optimize the use of interpreters, healthcare organizations must address systemic issues such as the recruitment and retention of qualified interpreters,

**Table 1. In-Person Medical Interpreter Services Literature Characteristics. NELP = non-English language preference. LEP = limited English proficiency**

| Article | Aim of Study | Outcome Measure | Language (s) | Study Setting | Result |
|---|---|---|---|---|---|
| Kelleher *et al*. (2024) | Compare ICU healthcare utilization between NELP patients with and without professional interpreters. | ICU readmission and length of stay | English | Intensive Care Unit | Patients who utilize a language interpreter have longer ICU stay, less change of readmission, better health outcomes, and become resource saving. |
| Lindholm *et al*. (2012) | Examine LEP patients' length of stay (LOS) and 30-day readmission rates with professional interpretation at admission/ discharge. | LOS and 30 day readmission. | English | Hospital | Patients with language interpretation services at admission/discharge had a decrease in LOS and were less likely to be readmitted. |

**Table 2. Telephone and Video Interpretation Services Literature Characteristics**

| Article | Aim of Study | Outcome Measure | Language(s) | Study Setting | Result |
|---|---|---|---|---|---|
| Schulz *et al*. (2015) | To show the effectiveness of videoconference interpreters for medical consultations and compare perceptions with on-site and telephone interpreting. | Patient and doctor satisfaction, number of problems, acceptability. | English | Consulting Room in Hospital | Most patients were satisfied with video interpreters, preferring them over telephone but having ambivalent feelings compared to on-site interpreters. |
| Feiring *et al*. (2020) | Compared hospital managers' and healthcare practitioners' views on factors affecting remote video vs. in-person interpretation use. Qualitative study. | Factors influencing remote interpretation use. | English | Hospitals | Individual barriers included interpersonal skill gaps and trust issues, while organizational barriers involved limited availability and time constraints. Remote video interpretation helped address organizational barriers and enhanced patient confidentiality but introduced communication challenges. |
| Stevens *et al*. (2011) | Comparing the satisfaction of LEP patients with in-person versus live-feed video interpreters. | Satisfaction | English, Spanish | Emergency Department | Most patients were satisfied with both in-person and live-feed video interpreters, valuing visual communication and the availability of video interpreters. |

***Professional Medical Interpreters:*** Professional medical interpreters are a crucial component to ensuring fluent communication between a healthcare provider and their limited English proficient (LEP) patients. Research consistently illustrates the positive effect they have on patient satisfaction, healthcare outcomes, and malpractice risk (Juckett& Unger, 2014). While specifically researching their effects in the Intensive Care Unit (ICU), it was found that the patients' odds of being readmitted decreased with a medical interpreter and their final length of stay only increased by 0.87 days (Kelleher *et al*., 2024). This underscores the role that these interpreters play in improving patient outcomes and the overall resource utilization of the hospital. Another study similarly found that in the ICU, the 30 readmittance rate of LEP patients after working with medical interpreters decreased and interestingly so did their length of stay (Lindholm *et al*., 2012). Additionally, a primary advantage of utilizing human resources is their ability to communicate the emotional expressions of the patient to their physician (Farini, 2024). This is especially significant to consider in this situation because oftentimes LEP patients have limited trust and a lack of an understanding relationship with their physicians. Effectively communicating their fears, anxieties, and joys would allow for a more caring environment that is centered around the patient. However, the primary concern arises with the shortage of qualified interpreters, particularly in underserved communities. The United States, Germany, and Saudi Arabia have the highest immigrant populations, with over 350, 20, and 10 languages spoken in each country respectively (Translators without Borders, n.d.; Wikipedia, 2021; WorldAtlas, 2016). It is challenging to find and employ enough medical interpreters to cover the required languages. Several factors contribute to the quality of interpreter services, including interpreter qualifications, cultural competence, and workload (Atlas LS, 2023). Research has shown that interpreters with specialized medical training and certification provide superior interpretation. Continuous education and training are essential to keep interpreters updated on medical terminology and cultural competence. Additionally, cultural

providing competitive compensation, and offering ongoing training and support. Providing competitive compensation and support for interpreters can help in retaining qualified professionals. This includes offering benefits, professional development opportunities, and a supportive work environment. Moreover, integrating interpreters seamlessly into the clinical workflow is crucial for ensuring timely and accurate communication. This can be achieved through regular team meetings, clear communication protocols, and involving interpreters in patient care planning. Additionally, fostering a culture of inclusivity and respect within healthcare settings can enhance the effectiveness of interpreter services and improve overall patient care.

***Language Services:*** Language services, including telephone and video interpreting, have emerged as valuable alternatives to in-person interpreters. These services offer greater flexibility and accessibility, particularly in rural or underserved areas. However, the quality of interpretation can vary depending on factors such as interpreter qualifications, technology infrastructure, and environmental noise. In the preoperative setting, healthcare providers have stated avoiding using telephone and video interpreting services due to difficulties in obtaining the devices, high wait times for interpreters, poor technical quality, or lack of familiarity with the service. This reluctance can hinder effective communication and patient care. To ensure the effectiveness of language services, healthcare organizations must invest in reliable technology, establish clear protocols for interpreter selection and training, and provide adequate support to both providers and patients. Additionally, it is essential to consider the preferences of patients and their comfort level with different modes of interpretation. Researchers examined the effectiveness of videoconference interpreters for medical consultations and compared perceptions with on-site and telephone interpreting (Schulz *et al*., 2015). The study found that most patients were satisfied with video interpreters, preferring them over telephone interpreters but having ambivalent feelings compared to on-site interpreters. This indicates that while

video interpreting can be a valuable tool, it may not fully replace the need for in-person interpreters in all situations. Aiming to understand how healthcare providers view this service, a study compared hospital managers' and healthcare practitioners' views on factors affecting remote video versus in-person interpretation use (Feiring&Westdahl, 2020). The qualitative study identified individual barriers, such as interpersonal skill gaps and trust issues, and organizational barriers, including limited availability and time constraints. Despite these challenges, remote video interpretation helped address organizational barriers and enhanced patient confidentiality. Altogether, satisfaction with both in-person and live-feed video interpreters is regarded highly, even in the most critical departments (Stevens *et al*., 2011). This suggests that video interpreting can be an effective alternative to in-person interpreting, particularly in settings where immediate access to interpreters is critical. In conclusion, while telephone and video interpreting services offer significant benefits in terms of flexibility and accessibility, their effectiveness depends on several factors, including the quality of technology and the training of interpreters. Healthcare organizations must carefully consider these factors and invest in the necessary resources to ensure that language services meet the needs of both providers and patients.

***Technological Solutions:*** Technological advancements have led to the development of innovative tools for addressing language barriers in healthcare. Machine translation, speech recognition, and real-time translation services offer potential benefits in terms of cost-effectiveness and accessibility. However, the accuracy and reliability of these technologies can vary, and their use should be carefully evaluated. To maximize the benefits of technology, healthcare organizations must select and implement systems that meet rigorous quality standards. It is also essential to provide staff with adequate training on how to use these tools effectively. Moreover, privacy and security considerations must be addressed to protect patient information. Recent studies have explored various technological interventions aimed at overcoming language barriers in healthcare settings. One study evaluated the effectiveness of a mobile translation app in hospital settings, focusing on user satisfaction (Albrecht *et al*., 2013).

**Table 3. Multilingual Offline Resources Literature Characteristics. LEP = limited English proficiency. CHW = community health worker**

| Article | Aim of Study | Outcome Measure | Language(s) | Study Setting | Result |
|---|---|---|---|---|---|
| Vordenburg *et al*. (2024) | Assessed pharmacy student's confidence in interacting with LEP patients after attending a required community health experience. | Confidence | English | Apartment building with high Mandarin-speaking population. | Increased confidence while communicating with LEP patients. |
| Kamaraju *et al*. (2023) | Evaluate multilingual CHW program for breast cancer screening. | Screening rates | Arabic, Burmese, English, Hindi, Punjabi, Swahili, Turkish, Urdu | Faith-based centers. | Training the community health workers successfully increased screening rates. |

**Table 4. Technological Intervention Literature Characteristics**

| Article | Aim of Study | Outcome Measure | Language(s) | Study Setting | Result |
|---|---|---|---|---|---|
| Albrecht *et al*. (2013) | Evaluate the effectiveness of a mobile translation app in hospital settings. | User satisfaction | German | Hospital wards | App perceived as helpful but not practical in daily workflow. |
| Miller *et al*. (2021) | Assessing multilingual health information access for foreign-born populations. | Health access inclusivity | English | Websites | Disparities in multilingual health information access for foreign-born residents in rural Japan. |
| Chen *et al*. (2016) | Evaluate the accuracy of Google Translate for diabetes education material. | Fluency, adequacy, meaning, and translation errors. | English, Spanish, Chinese | N/A | More accurate for English to Spanish than English to Chinese. Decreased sentence complexity. |
| Panayiotou *et al*. (2019) | Evaluate the suitability of iPad-compatible apps for everyday translation. | Suitability | Top 10 languages in Australia to and from English | N/A | Most apps were unsuitable for replacing interpreters. However, 2 apps were identified as potentially useful for basic communication tasks. |

***Multilingual Offline Resources:*** Multilingual offline services encompass a range of tools and resources designed to support communication in multiple languages. These include printed materials, digital resources, and staff training. While these services can complement professional interpreters, they should not be considered substitutes. To be effective, multilingual materials must be culturally appropriate, easy to understand, and up-to-date. Healthcare organizations should conduct regular assessments of patient needs to ensure that materials are relevant and accessible. Additionally, staff training in cultural competence and language diversity is essential for creating a welcoming environment for LEP (limited English proficiency) patients. For example, one study assessed pharmacy students' confidence in interacting with LEP patients after attending a required community health experience (Vordenberg *et al*., 2024). The study found that students' confidence increased significantly when they had access to multilingual resources. Similarly, another study evaluated a multilingual community health worker (CHW) program for breast cancer screening and found that training CHWs in multiple languages successfully increased screening rates (Sailaja Kamaraju *et al*., 2023). There is limited research on the effectiveness of multilingual brochures and other offline resources. However, these materials could be particularly beneficial in rural areas where access to technology is limited. In such settings, printed multilingual materials can ensure that essential health information reaches all patients, regardless of their language proficiency or access to digital resources. These findings suggest that while community interventions and staff training are effective, there is a need for more research on multilingual brochures. Such offline resources could play a crucial role in bridging communication gaps and improving health outcomes, especially in underserved rural communities or areas lacking human resources (Saeki *et al*., 2022).

Conducted in German hospital wards, the study found that while the app was perceived as helpful, it was not practical for daily workflow. This highlights the need for tools that integrate seamlessly into healthcare professionals' routines. Another study assessed multilingual health information access for foreign-born populations, with a focus on health access inclusivity (Miller *et al*., 2021). The study, conducted in English on various websites, revealed significant disparities in multilingual health information access for foreign-born residents in rural Japan. This underscores the importance of ensuring that health information is accessible to diverse populations, particularly in rural areas where resources may be limited. Moreover, while evaluating the accuracy of Google Translate for diabetes education material, measuring fluency, adequacy, meaning, and translation errors, the study covered English, Spanish, and Chinese languages and found that Google Translate was more accurate for English to Spanish translations than for English to Chinese, with a noted decrease in sentence complexity (Chen *et al*., 2016). These findings suggest that while machine translation can be useful, its accuracy can vary significantly depending on the language pair. Similarly, another study examined the suitability of iPad-compatible apps for everyday translation tasks, focusing on the top 10 languages in Australia to and from English (Panayiotou *et al*., 2019). The study concluded that most apps were unsuitable for replacing interpreters, although two apps were identified as potentially useful for basic communication tasks. This indicates that while technology can assist in bridging language gaps, it may not yet be a complete substitute for professional interpreters. These studies highlight the varying

effectiveness and practicality of different technological tools in healthcare settings. By carefully selecting and implementing these tools, and ensuring proper training and security measures, healthcare organizations can better address language barriers and improve patient care.

# CONCLUSION

Language barriers significantly impede healthcare access and outcomes for immigrant populations. This review examined various interventions to bridge these gaps, including professional interpreters, language services, multilingual resources, and technological solutions. While professional interpreters consistently demonstrate positive impacts, their availability and cost remain challenges. Telephone and video interpreting offer potential alternatives but require careful evaluation of quality and patient satisfaction. Multilingual offline resources, though understudied, show promise in supplementing interpreter services, especially in underserved areas. Technological interventions, such as translation apps, offer convenience but often lack accuracy and cultural sensitivity. To effectively address language barriers, a multifaceted approach is essential. Healthcare organizations should prioritize investing in qualified interpreters, expanding access to language services, developing culturally appropriate multilingual resources, and carefully evaluating the use of technology. Additionally, research is needed to assess the long-term impact of these interventions on patient outcomes and to explore innovative strategies for addressing emerging linguistic challenges in an increasingly diverse population. By implementing comprehensive language services, healthcare systems can improve access, quality of care, and patient satisfaction for immigrant communities.

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