



Implications of Language Barriers for Healthcare: A Systematic Review

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ABSTRACT

Objectives: Language barriers pose challenges in terms of achieving high levels of satisfaction among medical professionals and patients, providing high-quality healthcare and maintaining patient safety. To address these challenges, many larger healthcare institutions offer interpreter services to improve healthcare access, patient satisfaction, and communication. However, these services increase the cost and duration of treatment. The purpose of this review is to investigate the impact of language barriers on healthcare and to suggest solutions to address the challenges. **Methods:** We identified published studies on the implications of language barriers in healthcare using two databases: PubMed and Medline. We included 14 studies that met the selection criteria. These studies were conducted in various countries, both developed and developing, though most came from the US. The 14 studies included 300 918 total participants, with participation in each study ranging from 21 to 22 353 people. **Results:** We found that language barriers in healthcare lead to miscommunication between the medical professional and patient, reducing both parties' satisfaction and decreasing the quality of healthcare delivery and patient safety. In addition, the review found that interpreter services contribute indirectly to increased cost and the length of treatment visits. One study reported the implementation of online translation tools such as Google Translate and MediBabble in hospitals, which increased the satisfaction of both medical providers and patients (to 92%) and improved the quality of healthcare delivery and patient safety. Language barriers are responsible for reducing the satisfaction of medical providers and patients, as well as the quality of healthcare delivery and patient safety. Many healthcare institutions use interpreter services that increase the cost and length of treatment visits. **Conclusions:** The results of our review suggest that implementing online translation tools such as Google Translate and MediBabble may improve the quality of healthcare and the level of satisfaction among both medical providers and patients.

Language barriers have a major impact on the cost and quality of healthcare. They commonly occur between healthcare providers and patients when the two groups do not share a native language.¹ Regardless of language barriers, healthcare providers are required to deliver high-quality healthcare that adheres to the principles of human rights and equity to all their patients.²

Health disparities such as unequal treatment related to language barriers are associated with unequal access to healthcare and unequal health

outcomes.³ For instance, a recent study demonstrated that patients who do not speak the local language are disadvantaged in terms of access to healthcare services.⁴ Similarly, several studies have shown that patients who face language barriers have poorer health outcomes compared with patients who speak the local language.^{5,6}

Growing evidence documents the fact that language barriers indirectly impact the quality of the healthcare that patients receive. Language barriers contribute to reducing both patient and medical provider satisfaction, as well as communication

Table 1: Summary of general characteristics of studies.

Author	Country	Number of organizations	Type of organization	Study type	Data collection	Sample size	Response, %
Albrecht et al, ⁸	Germany	Hospital	MOH	Cross-sectional	Questionnaire	39	90.0
Ali et al, ⁹	England	Tertiary hospital	MOH	Qualitative descriptive approach	Interview	59 nurses	100
Al-Khathami et al, ¹⁰	Saudi Arabia	One medical city	MOH	Cross-sectional	Interview	116	100
Bagchi et al, ¹¹	USA	Medicaid program	NA	NA	Medicaid records	22 353	100
Bischoff et al, ²	Switzerland	Five health centers	MOH	Cross-sectional	Hospital database	795	61.1
Bischoff et al, ¹²	Switzerland	Four health centers	MOH	Cross-sectional	Interview	723	100
de Moissac et al, ^{13,14}	Canada	NA	NA	Cross-sectional	Online questionnaire and telephone interview	297	100
Divi et al, ⁵	USA	Six hospitals	MOH	Prospective study	Incident reports	1083	74.0
Kale et al, ¹⁵	Norway	All health centers in three cities	MOH	Cross-sectional	Questionnaire	1290	35.1
Ngo-Metzger et al, ¹⁶	USA	Eleven health centers	MOH	Cross-sectional	Mailed survey	2746	74.0
Pytel et al, ¹⁷	USA	Tertiary health care center	MOH	Prospective study	Questionnaire	123 patients/visitors and 73 nurses	60.0
Schlemmer et al, ¹⁸	South Africa	One hospital	MOH	Cross-sectional	Interview	21 health staff (6 junior doctors, 8 experienced nurses, 7 staff) and 5 patients	100
Van Rooyen et al, ¹⁹	Saudi Arabia	NA	MOH and private	Qualitative research	Interview	NA	NA
Wilson et al, ²⁰	USA	NA	NA	Cross-sectional	Telephone survey	1200	NR

*MOH: Ministry of Health; NA: not applicable; NR: not recorded.

between medical providers and patients. Patients who face language barriers are more likely to consume more healthcare services² and experience more adverse events.⁷ A recent study conducted in six hospitals in the US found that adverse events occurred more frequently among patients with limited proficiency in English than among those who were proficient in English.

This review investigates the impact of language barriers on healthcare and suggests solutions to address the challenges.

METHODS

We identified studies of the impact of language barriers on the delivery of healthcare by searching the

PubMed and Medline databases using the keywords: 'language barriers,' 'satisfaction,' 'healthcare,' 'limited English proficiency,' 'quality of care,' 'communication,' and 'access to health services.'

This review includes studies that address the impact of language barriers on the delivery of healthcare. It excludes studies into the impacts of communication barriers other than language barriers on the delivery of healthcare, studies that were not primarily conducted in healthcare organizations, and non-peer-reviewed articles. The search strategy was limited to articles published from 2000 to 2019 to find the most recent literature on the topic.

The extracted data are summarized in two tables. Table 1 outlines the general characteristics of the studies, including the country in which the study was

Table 2: The important findings from the 14 studies identified.

Author	Focus	Results
Albrecht et al, ⁸	Online translation tools	In case of reducing the cost of care (interpreter services), Google Translate and MediBabble application used in health organizations. Participants stated: - Free and easy to access (92%). - Saves time at the visit (92%). - Improves health care delivery and patient safety (92%).
Ali et al, ⁹	Impact on the provision of care	Limited English proficient patients (LEPPs) reported they had missing appointments and difficulties in arranging appointments because of language barriers.
Al-Khathami et al, ¹⁰	Patients satisfaction with the health services delivered by non-Arabic speakers (nurses)	The overall satisfaction of patients about nurse's care was 90%. Whereas, patients reported they had a concern about language barriers while delivering health care. Patients reported the following: - 30% of patients have difficulties in understanding the instructions of non-Arabic speaking nurses (NASNs). - 30% have a problem with the reliability of the information delivered by NASNs. - 50% believed that the language barrier is contributed to more susceptible to error. - 50% avoid and 70% end conversation. - 40% called for an interpreter.
Bagchi et al, ¹¹	Cost of interpretation services for Medicaid recipients	Non-English-speaking patients who used the interpreter services received more inpatient services and office visits. Providing interpreter services for Medicaid recipients was estimated at \$ 4.7 million annually.
Bischoff et al, ²	Cost of health care	- 26.4% of LEPPs reported no interpreter. - LEPPs increased the cost of health care indirectly by using an interpreter.
Bischoff et al, ¹²	Asylum seekers and refugees	- 11% of nurses reported poor communication with asylum seekers. - 76% of nurses stated there was no interpreter support when they need.
de Moissac et al, ^{13,14}	Patient satisfaction	The language barrier caused: - 66.7% of LEPPs reported that they had a barrier to accessing healthcare. - 20% of LEPPs indicated that not seeking health care services if these were not available for fear of not understanding. - 70.7% of LEPPs reported that the limited availability of interpreter services. - Increased stress and decreased confidence that health care service received were appropriate.
Divi et al, ⁵	Adverse events and patient satisfaction	LEPPs had adverse events, which resulted in: - Detectable physical harm (49.1% of LEPPs). - Moderate temporary harm or worse (46.8%). - Some failure in communication (52.4%).
Kale et al, ¹⁵	Cultural communication in health and health provider satisfaction	- 30% of health providers reported that they used interpreters daily because of the large immigrant patient population. - Physicians and nurses reported that they need for interpreters with 43.2% and 36.5% cases (who understand of Norwegian is insufficient), respectively. - 21% of health providers stated that there was poor access to interpreter services. - 37% of physicians reported they felt that patients hide some information because of the language barrier.
Ngo-Metzger et al, ¹⁶	Quality of interpersonal care	Patients with language-discordant providers reported receiving worse interpersonal care and less health education.
Pytel et al, ¹⁷	Communication and patient satisfaction	About 89% of patients reported that nurses speak in a way that meets their language needs, and that is an important item for communication needs. Whereas, 94.3% of nurses reported that it is very important for work and communication environments to understand the language of patients.
Schlemmer et al, ¹⁸	Language barrier on health workers and patients	Patients had poor satisfaction with care due to language barrier. Doctors did not understand patients who speak a different language, leading to wrong diagnosis and medication.
Van Rooyen et al, ¹⁹	South African (SA) nurses' satisfaction	SA nurses had communication barriers: - They had a big challenge of communication with patients and their family members because of the language barriers. - SA nurses were not interested in learning the Arabic language, but know a few words just for simple communication. - SA nurses had some difficulty in speaking with other nurses from other countries because their English speaking was in some way different.
Wilson et al, ²⁰	Adverse medication and patient satisfaction	LEPPs had problems with medical comprehension, which resulted in: - Problem understanding a medical situation (49%). - Confused about how to use medication (34.7%). - Trouble understanding the label on the medication (41.8%). - Bad reaction to medication due to problem understanding instructions (15.8%).

done, the total number of organizations in which the sample was collected, the type of organization that conducted the study, the study type, the data collection method, the sample size, and the response rate. Table 2 presents the implication of language barriers on the delivery of healthcare in each study in the review.

RESULTS

Figure 1 shows the researcher's method of selecting eligible studies for this review. Initially, the researcher's search of the PubMed and Medline databases returned 2569 articles. After removing the duplicate articles, 1211 remained. Next, the researcher excluded the articles that were not mainly about language barriers ($n = 605$) and the non-peer-reviewed articles ($n = 532$). Then the researcher excluded those studies that were not primarily conducted in healthcare organizations ($n = 60$), leaving 14 articles to be included in this systematic review.

Table 1 presents a summary of the general characteristics of the 14 studies arranged by the authors' names. Nine studies used a cross-sectional design, two used a prospective design, two used qualitative research, and one was a report. Five studies collected data from an interview survey, three used questionnaires, one used both an interview survey and questionnaires, three used hospital databases, and two used telephone and mail surveys. Five of the studies were conducted in the US, two in Saudi Arabia, two in Switzerland, and one each in Canada, Germany, England, Norway, and South Africa. The total number of participants in the 14 studies was 300 918, with the number of participants in each study ranging from 21 to 22 353.

Table 2 presents the most important findings of the 14 studies in this review. Seven of the studies focused on language barriers and patient satisfaction, two on the impact of language barriers on healthcare provider satisfaction, one on the impact of language barriers on both healthcare providers and patient satisfaction, two on the cost of interpretation services, one on the quality of interpretation services, and one on online translation tools. The findings of studies can be divided into three categories: the impact of language barriers on medical providers (such as physicians and nurses), patients, and the cost and quality of healthcare services.

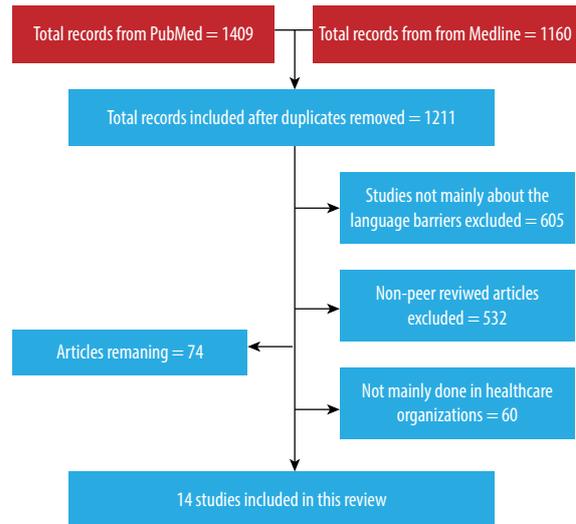


Figure 1: The process of selecting the included 14 studies in this review.

Communication between patients and medical providers is at the heart of effective healthcare. In Pytel,¹⁷ 94.3% of nurses reported that it was very important for their work environment and communication to understand the language of their patients. Physicians also have difficulty understanding patients who do not speak their language, leading to wrong diagnosis and medications.¹⁸ In Norway, medical providers reported that they had trouble understanding between 36% and 43% of the patients who do not speak the local language, necessitating interpreters.¹⁵ Indeed, 37% of physicians indicated that they felt that patients hide some information because of language barriers.¹⁵ In addition, all South African nurses in Saudi Arabia had difficulty communicating with patients and their family members, as well as nurses from other countries, because of language barriers.¹⁹

Language barriers have negative implications for the delivery of healthcare and patient satisfaction. One study showed that among patients who received treatment from nurses who did not speak the local language, 30% had difficulty understanding medical instructions, 30% had a problem with the reliability of information, and 50% believed that the language barrier contributed to errors.¹⁰ Other studies found that among patients who did not speak the local language, 49% had trouble understanding a medical situation, 34.7% were confused about how to use medication, 41.8% had trouble understanding a

label on medication, 15.8% had a bad reaction to medication due to a problem understanding their healthcare provider's instructions,²⁰ 66.7% faced a barrier when accessing healthcare, and 20% did not seek healthcare services if these were not readily available for fear of not understanding their healthcare provider.¹⁴ Furthermore, many patients with limited local language proficiency experienced adverse health events that resulted in detectable physical harm (49.1% of patients) or moderate temporary harm (46.8%) or experienced some failure in communication with medical providers (52.4%).⁵ Patients with limited local language proficiency are also likely to miss medical appointments and have difficulties arranging appointments due to the language barrier.⁹ Therefore, these patients have a poor level of satisfaction with their healthcare.^{14,18}

To increase patient satisfaction with healthcare, it is necessary to provide interpreter services. Two studies pointed out that medical providers needed interpreter services for 43.2% of their patients, and 21–76% of medical providers stated they had poor access to these services.^{12,15} Moreover, 70.7% of limited English proficiency patients (LEPPs) reported limited availability of interpreter services,^{13,14} and 26.4% reported that there were no interpreters in their healthcare institutions.² LEPPs also indirectly raise the cost of health services when they use interpreter services.¹² LEPPs who used interpreter services received more inpatient services and attended more office visits than those who did not.¹¹ The authors of this study estimated that interpreter services for Medicaid recipients at about \$4.7 million annually. Some healthcare organizations use online translation tools such as Google Translate and MediBabble to address the challenges of language barriers. These tools are free and easy to access, and they contribute to improving healthcare delivery, patient safety, and increased (up to 92%) the satisfaction of both medical professionals and patients.⁸

DISCUSSION

This review investigates the impact of language barriers on the delivery of healthcare and identifies possible solutions to the challenges posed by these language barriers. The first impact of language barriers is miscommunication between medical providers (physicians and nurses) and patients [Table 2]. This

miscommunication contributes to a reduction in the satisfaction of both medical providers and patients, the quality of healthcare delivery, and patient safety. The second impact is an increase in indirect healthcare costs. The final impact is the application of online translation tools to healthcare organizations, which improves the quality of healthcare delivery and patient safety and increases the satisfaction of both medical professionals and patients.

Language barriers are a key cause of miscommunication between medical providers and patients, and negatively affect the quality of healthcare services and patient satisfaction. Hospital medical professionals perceive language barriers to be a source of workplace stress and an impediment to the delivery of high-quality healthcare.²¹ Much evidence shows a significant association between workplace stress and lower satisfaction among medical providers.^{22–24} In addition, studies indicate that language barriers contribute to medical professionals' incomplete understanding of patients' situations, delayed treatment or misdiagnoses, poor patient assessment and incomplete prescribed treatment.^{14,25}

We also found that patients who do not speak the local language will have less satisfaction with their healthcare and less access to usual sources of healthcare. Even when patients with language barriers have access to healthcare, they have decreased satisfaction with that healthcare, decreased understanding of their diagnoses, and increased medication complications.^{25,26} A study conducted in Saudi Arabia showed that 25% of foreign patients reported that they had difficulty communicating with medical professionals and decreased satisfaction with their healthcare; 20% of medical professionals reported that health outcomes (i.e., healthcare errors, understanding patient needs, feeling satisfaction, and trust in nursing care needs) were always affected by language barriers.²⁷ Interpreter services are necessary to solve the problem of language barriers in healthcare institutions and to increase the satisfaction of both medical professionals and patients.

To overcome language barriers, some healthcare institutions provide interpreter services; however, these services pose critical challenges in terms of access and financial burden. Previous studies have shown that most healthcare institutions have poor access to interpreter services or no services at all.^{12,14} The use of interpreter services contributes to increased patient satisfaction and improved

patient care among patients with language barriers.²⁸ Interpreter services have a significant association with increased physician visits, prescription drugs by physicians, and receipt of preventative services among patients.²⁹ However, providing interpreter services also increases the length and cost of physician visits.

MediBabble is an application created by medical students at the University of California, San Francisco, and released in 2011. Using advanced voice recognition software, it offers translations for thousands of medical instructions, as well as the questions for a standard medical history.^{30,31} The application contains thousands of instructions and translated questions, organized by symptom. Most questions can be answered with 'yes' or 'no' gestures.³² MediBabble can be used online or offline, and it allows physicians to take patient histories and make diagnoses when a language barrier exists.³² However, the application translates only six languages: English, Spanish, Russian, Cantonese, Haitian Creole, and Mandarin.³²

A case study showed that medical professionals and patients were highly satisfied with MediBabble; they reported that the application was fast and easy in terms of translating and collecting information.³³ In a study done in Canada, MediBabble was used as one strategy to improve the delivery of healthcare for resettled Syrian refugees. It allowed medical professionals to take the refugees' histories and also make diagnoses.³⁰ In brief, MediBabble shows success as a medical translator. Using both interpreter services and online translation tools may offer more opportunities to improve healthcare delivery and patient safety.

This review has some limitations. First, there are few existing studies on the application of online translation tools in healthcare to address the problem of language barriers. Second, there are few studies evaluating the challenges of language barriers in private healthcare organizations. The impact of language barriers must be evaluated in both the public and the private sectors to address this problem.

This review also has several strengths. First, studies included in the review were conducted in both developing and developed countries. Second, the response rate was 100% in six of the studies. Third, the studies focused on various aspects of language barriers in healthcare, which helped the

researchers to evaluate the challenges from multiple angles and determine solutions.

CONCLUSION

Language barriers can make the delivery of high-quality healthcare very challenging. They have a negative impact on the quality of healthcare, patient safety, and the satisfaction of medical professionals and patients. While some health organizations provide interpreter services to address these problems, these services indirectly increase the cost of health services and increase the length of treatment visits. Online translation tools such as Google Translate and MediBabble present possible solutions for overcoming these challenges. Further studies on the implications of language barriers and the effectiveness of online translation tools are recommended. Furthermore, new updates with more medical phrases for Google Translate and with more languages included for MediBabble application are recommended.

Disclosure

The authors declared no conflicts of interest.

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