

**The Impact of Verbal Communication on Limited English Proficiency Hispanic Adults: A
Systematic Review**

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Abstract

Introduction: Limited English Proficiency is defined as difficulty reading, writing, understanding, and speaking English. Patients with limited English proficiency experience longer and more frequent hospital stays than patients with language proficiency. A growing body of research is exploring how language concordant providers and interpreter services as methods of verbal communication can affect health outcomes in this population.

Methods: This paper utilized Medline Complete, CINAHL, PubMed, and Web of Science to conduct a literature review. Inclusion criteria included primary research studies, published within the last five to six years, peer-reviewed, published in English, performed within the United States, pertaining to limited English proficiency adults, pertaining to verbal communication, pertaining to health outcomes. The initial search produced 4,996 articles, from which nine were selected based on inclusion and exclusion criteria.

Results: Clinical outcomes in patients with language-concordant providers had mixed results. Two articles found improvement in clinical outcomes, one article found that language-concordant providers are more thorough in history taking, and two articles found no significant differences in language concordant and language discordant care. Patients who received interpreter services received higher quality of care compared to those that did not, although all outcomes did not improve uniformly. Hispanic adults regardless of English proficiency generally have poorer control of chronic conditions.

Discussion: Patients with language concordant providers generally have positive health outcomes. Language discordant providers should always utilize professional medical interpreters and should advocate for bilingual staff.

Keywords: limited English proficiency, communication barriers, patient outcomes, interpreter services, language concordance

The Impact of Verbal Communication on Limited English Proficiency Hispanic Adults: A Systematic Review

When was the last time that you made an important medical decision in a language foreign to you? An estimated 69 million people in the United States (US) speak a language other than English at home and an estimated 25 million people in the US have limited English proficiency (LEP) (United States Census Bureau, 2022). LEP is defined as difficulty understanding, reading, writing, and speaking English (Diamond et al., 2019). Educating patients with LEP poses a unique challenge for healthcare providers. The language capabilities of these patients are often quickly and informally assessed by providers who must then find a way to effectively communicate and educate these patients on complex health matters. Studies demonstrate that Hispanic patients are two times more likely to have lower health literacy than their white counterparts (Harris et al., 2017). This contributes to a higher likelihood of medication errors and nonadherence to treatment (Harris et al., 2017). Hispanic adults are four to five times more likely to commit medication errors when their provider is not proficient in their native language (Rechenberg et al., 2021). Current research on this topic is outdated and mainly explores patient and provider's experience and satisfaction rather than objective data. The purpose of this paper is to perform a literature review exploring the effect of language concordance and interpreter services in the verbal communication between healthcare providers and LEP Hispanic adults and how these methods can influence health outcomes in a primary care setting.

Background and Significance

Patients with LEP experience longer and more frequent hospital stays than patients with language proficiency (Ugas et al., 2023). LEP Hispanic adults can benefit from preventative

services, health screenings, and promotion of healthy behaviors. Improving the health care of these patients can result in significant cost reductions to the healthcare system (Ugas et al., 2023). Federal regulations require the use of trained interpreters for LEP patients, but compliance varies across healthcare organizations and individual clinicians (Ugas et al., 2023). The result is inequitable care. Patients with language concordant (LC) providers have better health outcomes than language discordant (LD) providers (Parker et al., 2017). Some non-fluent clinicians actively seek to communicate in a patient's language and must have the self-awareness to know when an interpreter service is required. The use of professional interpreters increases adherence to medical processes, but outcomes can be inconsistent (Njeru et al., 2017). The purpose of this review is to examine the different ways that providers can communicate with patients and how those affect healthcare outcomes. This may provide insight into gaps in research and the interventions that must take place to improve the health care of LEP Hispanic adults.

Review of the Literature

In the research literature, multiple systematic reviews have been performed relating to similar topics. The current literature is outdated. All relevant research to this topic is more than six years old or if it was published more recently, it has included articles that date back around 50 years. Lastly, most of the current research on LEP Hispanic adults and LC providers explores patient satisfaction and patient experience. None of the research reviewed opted to directly compare the health outcomes of LEP Hispanic adults that had a LC provider with those that received interpreter services. This is important because health outcomes are an objective way for comparing the two modalities.

Diamond et al. (2019) conducted a systematic review of five databases that included 33 studies. The studies were screened by two authors and appraised utilizing the Downs and Black checklist (Diamond et al., 2019). Of the 33 articles, four were randomized control trials and 29 were cohort studies (Diamond et al., 2019). Diamond et al. (2019) found a positive impact on at least one major health outcomes for patients with language-concordant care. Patients had higher satisfaction and empowerment when language-concordant care was used which can positively impact long-term provider-patient relationships (Diamond et al., 2019). Three studies demonstrated negative results including lower colorectal cancer screening tests and longer emergency department throughput times (Diamond et al., 2019). An important limitation of the studies included in this systematic review is the lack of a validated tool to assess the fluency of language-concordant providers (Diamond et al., 2019). Another limitation of this study is the publication time of the studies reviewed. Some go back as far as 1973, with the most up to date being published in 2017. The studies in this review mainly compared LC providers communication with LD providers communication. This systematic review does not address how LD providers can improve the health outcomes of their patients. This is limiting because most providers that LEP Hispanic adults encounter are LD providers.

A research article that was truly groundbreaking at the time was conducted by Flores (2005). This was the first systematic review that examined the impact of interpreter services on the quality of health care (Flores, 2005). Five databases were reviewed which yielded 76 articles, those were assessed for exclusion criteria including sign language and interpreter services for the deaf (Flores, 2005). Thirty-six articles were chosen from US and international studies with the exclusion criteria being opinion pieces, not addressing interpreters' services and not directly addressing a health care quality issue or patient satisfaction (Flores, 2005). Three general

categories were examined: communication issues, patient satisfaction with care, and processes, outcomes, complications, and use of health services (Flores, 2005). Results showed that patients that use family members as interpreters were less likely to have been educated on medication side effects and up to half of ad hoc interpreters misinterpret or omit all physician questions (Flores, 2005). Miscommunication with interpreters affected the physicians understanding of the symptoms or the credibility of the patient in as high as 52 percent of the encounters when nurses were used as interpreters (Flores, 2005). Evidence suggested that bilingual and professional medical interpreters were the best option for communicating with LEP patients (Flores, 2005). Limitations of this study included only having one randomized control trial in the selected studies. There was no direct comparison between bilingual providers and trained interpreters. Finally, this systematic review is from 2005 and additional evidence has been published since that time.

A recent case study explored the relationship of language-concordant care on patient comfort level and satisfaction when interacting with their provider (Lopez Vera et al., 2023). The study implemented a medical Spanish course to student doctors on the campus of California University of Science and Medicine for one year (Lopez Vera et al., 2023). The program was designed as a dual model with instructor-led sessions and peer-tutor sessions on a weekly basis (Lopez Vera et al., 2023). The instructor-led class consisted of at least 30 lessons around Spanish grammar and vocabulary. Spanish speaking patients were recruited from a free clinic to participate in the study (Lopez Vera et al., 2023). The study included 25 Hispanic adult patients (Lopez Vera et al., 2023). The experimental group were seen by Spanish-speaking student doctors while the control group was seen by English-speaking student doctors with an interpreter (Lopez Vera et al., 2023). The patients were then surveyed on comfortability speaking to provider, perception of

care, and discussion of sensitive topics (Lopez Vera et al., 2023). Patients that received care from the Spanish-speaking student doctor perceived a higher level of attention, higher level of comfort, and satisfaction with their care compared to those that received care with an interpreter (Lopez Vera et al., 2023). Limitations of this study include its small sample size. Although this study compares LC providers and interpreter services, it does so by comparing patient experience and level of comfort. Clinical outcomes would be a more objective method of comparing the two modalities.

Purpose and Clinical Question

The purpose of this paper is to perform a systematic review that analyzes how different language concordant verbal communication methods such as language concordant providers and interpreters can affect the health outcomes of LEP Hispanic adults. In LEP Hispanic adults, how does receiving language concordant care compare to language discordant care affect health outcomes? The language concordant verbal communication methods are identified as professional interpreter services, ad hoc interpreter services, relation interpreters, and bilingual providers. To the knowledge of the researcher, there is no systematic review that compares interpreters to bilingual providers. The focus will primarily be on primary care clinics and private practices settings. It is important to point out that in the scope of this review the term language-concordance care is defined as any care providing using the patient's primary spoken language. This definition excludes characteristics such as cultural values or shared ethnic background. Not because these characteristics are not important but because their subjective nature poses a research challenge outside the scope of this review. Outcomes are identified as clinical outcomes, patient satisfaction, and communication.

Conceptual Framework

A fundamental concept behind this research article is the belief that people are more likely to change their behavior when they have a better understanding of the risks and benefits of an intervention. The Health Belief Model (HBM), created by Hochbaum & Rosenstock in 1952 and expanded by Janz & Becker in 1984, models the adoption of preventative health behaviors (Jones et al., 2015; Mckellar & Sillence, 2020). The HBM promotes healthy behaviors which are defined as any action to prevent or detect disease in the asymptomatic stage (Mckellar & Sillence, 2020).

The emphasis of this paper will be on the primary care and private practice setting. The importance of this setting is the ability of providers to utilize primary prevention to educate patients on healthy behaviors. For primary prevention to be effective then patients must understand the risks of their health behaviors. In the HBM, health behavior is divided into three categories: individual perceptions, modifying factors, and likelihood of action (Mckellar & Sillence, 2020). Individual perceptions are those that affect the perception of illness (Mckellar & Sillence, 2020). This is where with appropriate communications providers can influence the health behaviors of their patients. Modifying factors are those that are costs, severity of illness, susceptibility to illness, health motivation, perceived threat, cues to action, and perceived control (Mckellar & Sillence, 2020). Provider-patient communication can heavily influence how patients view their modifying factors and providers can provide solutions to some of the barriers that patients may encounter. Knowledge of programs such as GoodRx that can lower costs and accessibility of interventions can help promote healthy behaviors. Lastly, the likelihood of action is defined as the benefits minus the barriers of taking action (Mckellar & Sillence, 2020).

According to the HBM, if a person perceives a threat to their health and is educated on the benefits of action then they are likely to undergo the recommended preventative health action (Mckellar & Sillence, 2020). The HBM guides this paper by emphasizing that preventative health is only possible when an individual understands the risks and benefits of their actions.

Methods

Project Design

The design of this paper is that of a systematic review of the literature. This review was guided by the HBM because a fundamental concept to this review is the important role that providers have in educating patients. According to the HBM, when patients understand the risks, barriers, and benefits of participating in healthy behaviors then they are more likely to participate in them. LEP Hispanic adults is a population that suffers from two barriers which are low health literacy and language proficiency. When providers verbally communicate with LEP Hispanic adults in a language concordant way then they are addressing those barriers. Furthermore, a provider has an important role as an educator which can only be appropriately fulfilled when language concordant communication is present. The purpose of this review is analyzing different methods that providers can use to verbally communicate with LEP Hispanic adults. A systematic review of the data on the effectiveness of the different verbal communication methods can aid future providers in how they approach choosing a verbal communication method.

Search Strategy

The terms used to conduct the search for articles included: limited English proficiency, language, communication barriers, quality of health care, physician-patient relations, translating, patient outcomes, interpreter services, and language concordance. Databases utilized for the literature search were Medline Complete, CINAHL, PubMed, and Web of Science. Part of the

search was driven by ancestry searching. This strategy involves using reference lists of articles found that fit the criteria to expand the search. Web of Science was also utilized to find additional articles that have cited the selected articles in their reference and therefore utilize the most up to date research available for this review. Inclusion criteria included primary research studies, published within the last five to six years, peer-reviewed, published in English, performed within the US, pertaining to LEP adults, pertaining to verbal communication, and pertaining to health outcomes and patient satisfaction. Exclusion criteria included research done solely on a minority group that did not include Hispanic adults. Quality appraisal conducted utilizing the Rapid Critical Appraisal Checklists tool found in Appendix B in Melnyk & Fineout-Overholt (2019) with a cutoff score of five out of ten.

Selection Process

Articles were reviewed first by title, then by abstract, and finally fully reviewed. One person conducted the searches and screened the studies. Zotero was used as a citation manager tool. The flow diagram in this paper (see Figure A1) illustrates the article selection process. Flow diagram template for Figure A1 was obtained from Page et al. (2021). The Rapid Critical Appraisal Checklists found in Melnyk & Fineout-Overholt (2019) were utilized to identify the risk of bias in the studies, with a cutoff score of five out of ten.

Synthesis Method

An Evidence Synthesis Table (EST) illustrated in Table A1 was utilized to organize and categorize the pertinent information extracted from the selected articles. The EST was used to identify categories such as author, purpose, methods, framework, design, sample, setting, findings, quality appraisal, limitations, conclusion, and applicability to practice. This was a particularly useful method of quickly reviewing the most important aspects of the studies

selected. Several themes arose as important to how providers communicate with patients. One of the biggest overarching themes in the literature is the health disparities that LEP patients experience. Another theme was the ability of language concordant providers to connect to patients verbally and culturally and individualize care. Barriers that affect healthcare for LEP patients is a theme that has been vastly explored. A theme that is explored in the literature is the influence of culture in health, most researchers do not take that into account when developing guidelines. What can work for one person from one culture may be inappropriate or unlikely to be adopted by another based on their beliefs. The lack of health literacy in LEP Hispanic adults was also explored because it can influence a patient's understanding of their health care.

Results

Search Results

A systematic search of MEDLINE Complete, CINAHL, and PubMed resulted in 4,996 articles identified. From MEDLINE Complete 2,390 articles, from PubMed 1,201 articles, and from CINAHL 1,405 articles were found. A total of 35 articles were removed due to being duplicates. During the screening process, 2,408 articles were automatically excluded using automation tools due to publication date. The publication date criterion limited results to articles published between January 2017 and October 2023. Twelve articles were excluded for an inability to be retrieved. The remaining 2,541 articles were assessed for eligibility. Of those, 1,524 articles were excluded for pertaining to the wrong population, setting, or intervention. Seventy-four articles were systematic reviews, scoping reviews, or meta-analysis of existing data. A total of 325 articles were excluded for not being relevant to the question and 609 articles were excluded for pertaining to a non-US population. This left a total of nine articles in this systematic review as outlined in the flow diagram (see Figure A1).

Characteristics of Studies

As evidenced in the Evidence Synthesis Table (see Table A1), the studies selected consisted of two randomized controlled trials (Menon et al., 2022; Seible et al., 2021), six retrospective cohort studies (Fernandez et al., 2017; Fernandez et al., 2018; Holman et al., 2023; Luan Erfe et al., 2017; Njeru et al., 2017; Parker et al., 2017), and one qualitative study (Kenny et al., 2020). Their purposes range from association between language concordance and adherence to treatment (Fernandez et al., 2017), language concordance and interpreter services effects on clinical outcomes (Fernandez et al., 2018; Holman et al., 2023; Kenny et al., 2020; Luan Erfe et al., 2017; Menon et al., 2022; Njeru et al., 2017), changes in outcomes in patients that switched to LC providers (Parker et al., 2017), and the differences in history taking between LC providers and interpreter services (Seible et al., 2021). Their sample sizes ranged from 61 participants (Kenny et al., 2020) to 30,838 participants (Fernandez et al., 2017), with a total sample size across studies of 58,811 participants. Most studies were conducted outside of a hospital setting in a primary care or private clinic (Fernandez et al., 2017; Njeru et al., 2017; Seible et al., 2021), healthcare system (Fernandez et al., 2018; Menon et al., 2022; Parker et al., 2017), mobile exam center (Holman et al., 2023), and mixture of primary care settings and hospital settings (Kenny et al., 2020). One study was conducted in a hospital setting (Luan Erfe et al., 2017) and was included despite hospital setting being an exclusion because the findings pertain to rehabilitation services and further management would be done in a primary care setting. The nine studies were grouped based on area studied: LC care (Fernandez et al., 2017; Fernandez et al., 2018; Menon et al., 2022; Parker et al., 2017), interpreter services (Holman et

al., 2023; Luan Erfe et al., 2017; Njeru et al., 2017), and a mixture of both (Kenny et al., 2020; Seible et al., 2021). Additional characteristics of the reports can be found in Table A1.

Synthesis Across Studies

The studies that examined clinical outcomes in patients with LC providers found mixed results in medication and treatment adherence with two articles finding improvement in clinical outcomes (Menon et al., 2022; Parker et al., 2017) and one article finding that LC providers were more thorough in history taking (Seible et al., 2021) but two other articles found no significant differences in LC and LD care (Fernandez et al., 2017; Fernandez et al., 2018). Patients who received interpreter services received higher quality of care compared to those that did not have an interpreter (Luan Erfe et al., 2017; Njeru et al., 2017), however, not all outcomes improved uniformly (Njeru et al., 2017). Latino adults regardless of English-proficiency generally have poorer control of chronic conditions compared to white adults (Fernandez et al., 2017; Fernandez et al., 2018), however, Holman et al. (2023) found no differences in Hemoglobin A1c in LEP Spanish speaking adults and English-speaking adults. An overarching theme arose across multiple studies that LEP Hispanic adults may require a complex intervention to improve clinical outcomes that goes beyond a language concordance intervention (Fernandez et al., 2017; Fernandez et al., 2018; Holman et al., 2023; Menon et al., 2022; Njeru et al., 2017).

The HBM explains health behavior is influenced by six domains; one of these domains is barriers to action (Mckellar & Sillence, 2020). LEP adults face individual and systematic barriers to receiving timely and appropriate care (Fernandez et al., 2017; Luan Erfe et al., 2017; Kenny et al., 2020). Personal barriers for LEP adults include literacy, cultural, and language barriers (Fernandez et al., 2017; Kenny et al., 2020). Systematic barriers faced by LEP adults included financial barriers, access to interpreters, and lack of bilingual staff (Fernandez et al., 2017;

Kenny et al., 2020; Luan Erfe et al., 2017; Njeru et al., 2017; Seible et al., 2021). This supports the theme that improving clinical outcomes in LEP Hispanic adults is multifactorial and complex (Fernandez et al., 2017; Fernandez et al., 2018; Holman et al., 2023; Menon et al., 2022; Njeru et al., 2017).

Selected articles found themes that are worth sharing. Theme: Interpreter services are beneficial: Luan Erfe et al., (2017) found that clinicians do not use interpreter services consistently which can lead to health disparities in LEP adults. This illustrates the importance of finding solutions for this population. One of these solutions could be a health coaching program such as the one done in Menon et al. (2022). The program addressed nutrition, physical activity, and medication adherence to help lower a patient's HbA1c (Menon et al., 2022). According to the HBM, individual perceptions can affect our perception of illness and providers can play a big role in this domain (Mckellar & Sillence, 2020). Theme: Engaging in the patient's language is promotes better care: Patient's whose provider engages with them in the same language report higher confidence and minimize delays in their care (Kenny et al., 2020). This supports the overall idea of the HBM that patients that understand the risk and benefits of their actions are more likely to participate in preventative health practices. Theme: Patients with LC providers have higher satisfaction with their care. Although satisfaction was not a clinical outcome that was heavily explored in this review because the focus was clinical outcomes, it is worth noting that patients had the highest satisfaction with LC providers when compared to interpreters (Seible et al., 2021). The biggest overarching theme found across all articles which is that Latino adults regardless of English proficiency may require interventions that go beyond language concordance to optimize their health. Findings across studies provide strong evidence that the healthcare of Hispanic adults is complex and requires multifactorial interventions. Five of the

nine studies reviewed found this to be the case (Fernandez et al, 2017; Fernandez et al., 2018; Holman et al., 2023; Menon et al., 2022; Njeru et al., 2017) and no study reviewed contradicted this theme.

Discussion

The purpose of this review was to analyze the options that providers have in verbally communicating with LEP Hispanic adults. Those options are language concordance between provider and patient or the use of interpreter services. One of the aims of this review was to analyze the statistical data regarding the clinical outcomes of patients that receive language concordant care. The literature reviewed found mixed results in the efficacy of LC providers in improving clinical outcomes such as medication and treatment adherence. Two articles found it to be significantly beneficial and two others found no differences in the patient's clinical outcomes (Fernandez et al., 2017; Fernandez et al., 2018; Menon et al., 2022; Parker et al., 2017). These may be due to the complexities of managing the health care of patients. Type 2 diabetes management includes adequate medication adherence, and it also requires nutritional changes and an increase in physical activity. Several complex factors go into a patient's health status that may go beyond a language intervention. LC providers may be beneficial for patients and can be a cost-effective way of improving clinical outcomes, but more research is required to determine how effective it truly is in improving clinical outcomes in LEP Hispanic adults.

Another aim of this study was to analyze how different types of interpreters, such as professional interpreters and relational interpreters, can affect clinical outcomes. There was no data found comparing the two modalities of interpreters. There was also no data found that examined relational interpreters and their effect on clinical outcomes. This is most likely because the use of professional interpreters has been identified by prior research and federal mandate as

the standard of care in communicating with LEP adults. Although interpreter modality was not compared in the literature, the efficacy of interpreters was explored. Two articles found that patients who have access to interpreter services receive higher quality care compared to those that do not (Luan Erfe et al., 2017; Njeru et al., 2017). Interestingly, not all clinical outcomes improved uniformly with the use of interpreters. Research may be needed to identify if this is due to inconsistencies in interpretation or due to complexities of the health of patients and the barriers to healthcare that they face.

The final aim of this review was to compare clinical outcomes of patients that received LC care and those that receive interpreter services. There was no data found that compared the clinical outcomes between these two communication modalities. One article that compared the two found that patient satisfaction is greater in patients with LC providers, but direct clinical outcomes were not studied (Seible et al., 2021).

Lastly, chronic conditions such as diabetes and hypertension are generally less well controlled in Latino patients compared to white patients, regardless of English-speaking abilities (Fernandez et al., 2017; Fernandez et al., 2018). The HBM highlights the importance of recognizing the barriers to action that patients encounter so that providers and the healthcare system can work towards reducing them. Personal barriers identified include health literacy and cultural differences. Systemic barriers were determined to be financial access, access to interpreters, and lack of bilingual staff. The HBM identifies the likelihood of action as an important step in effecting change in patients. Providers that are in tune with how personal and systemic barriers affect their patient's individual can help them overcome them in a variety of ways. Providing community resources, prescribing generic medications that are cost-effective, and asking patients about their cultural health perceptions can facilitate this interaction.

Recommendations from Findings

LC care has been studied in other countries and settings with positive results. Seale et al. (2022) found that patients who received language-concordant care had a lower risk of adverse effects and death in the hospital. Shorter length of stay was also significantly reduced in patients with LC care (Seale et al., 2022). Another study found that Spanish-speaking providers can raise the comfort level and satisfaction of Hispanic patients in contrast to having an interpreter (Lopez Vera et al., 2023), however, the study did not directly assess clinical outcomes.

Possible reasons as to why LC providers showed mixed results in improving clinical outcomes can be the intricacies of managing complex diseases. To manage a chronic health condition a patient must adhere to medication and treatment plans along with changing their lifestyle behaviors. These large number of variables can be difficult to account for when trying to establish a cause-and-effect relationship during a research study.

Based on the evidenced reviewed, it is recommended that LEP Hispanic adults receive LC care from a LC provider. LD providers who have difficulty with LEP Hispanic adults meeting their clinical outcomes can advocate for bilingual staff such as case managers or health navigators. This addition to the healthcare team can help bridge some of the cultural and language gaps that exist in the patient-provider relationship. Referral to a LC provider can also be offered if patient's clinical outcomes are not meeting expectations. This recommendation requires a diverse provider workforce.

Another recommendation based on the data found is the importance of utilizing professional medical interpreters on a consistent basis. This will build rapport with the patient and improve patient clinical outcomes and satisfaction. At a system level, clinics can ensure that

interpreters are available for staff to use. A recommendation for LD providers can also include suggesting a class or health coaching intervention in Spanish for their LEP Hispanic adult patients to learn about their disease processes and the intricacies of treatment. This type of health coaching intervention can help to further build on the education provided during a clinic visit since time with individual patients can be a limiting factor.

Limitations

Several limitations were encountered during this systematic review. The first is that most research regarding LC care pertains to patient or provider satisfaction and very limited research data exists about quantifiable clinical outcomes in LEP Hispanic adults that receive LC care or interpreter services. This may be due to language concordance become more prominent in the last decade as the provider population has diversified. Further research that specifically evaluates clinical outcomes is needed. Secondly, the articles that do address the topic of LC care do not have a high level of evidence. As a result, it is difficult to establish a cause-effect relationship between the two variables. More articles that utilize randomized controlled trials as a research method are needed. Thirdly, most of the research on LC care and interpreter services as a communication intervention are in a hospital setting instead of primary care. This could be because collecting information from a hospital may be more accessible than a private clinic. Due to our increased efforts to shift healthcare towards preventative services, research in primary care is needed. The fourth limitation is that patients and providers could have been misclassified in their English or Spanish proficiency since it was self-reported. A widely accepted tool to assess English proficiency is not commonly part of the hiring process of providers. This can be improved by utilizing a tool to assess provider proficiency in Spanish and English-speaking Latino adults' proficiency in English.

Conclusions and Implications

LEP Hispanic adults face health disparities compared to their white English-speaking counterparts. This is the result of multiple personal and systematic barriers. Health literacy, cultural beliefs, and language are examples of the personal barriers. Lack of access to interpreters, financial access, and lack of bilingual staff are systemic barriers. Healthcare providers have a legal and ethical duty to provide quality care in their patient's language. LC care can be achieved by consistently utilizing professional medical interpreters or by speaking to the patient directly in their language. Current research shows mixed results in clinical outcomes for patients that have LC provider, some show positive results and others show no difference. Research in other settings and countries shows generally positive results in the health outcomes of patients with LC providers. Further high-quality research is needed in the primary care setting to evaluate this relationship.

Utilizing professional medical interpreters is the minimum standard in communicating with LEP Hispanic adults to facilitate access to health care and improve health outcomes. Although effectively reducing health disparities in Hispanic adults may be beyond the scope of individual providers, providing consistent communication in a patient's preferred language can eliminate one of the barriers that this population faces. Minimizing language barriers can also highlight other barriers that may be influencing a patient's health status.

Further clinical research is needed that quantifies patient outcomes as it relates to LC providers and interpreter services. Research that directly compares the two modalities and is performed in a primary care setting is also needed. Another area that requires further research is how technology can influence patient-provider communication and clinical outcomes. The

coronavirus pandemic had a fundamental role in shifting attention towards technology driven initiatives such as telehealth. This has yet to be explored in its efficacy in providing LC care. Research on the influence of personal and systemic barriers, such as health literacy and educational level, is also needed. This can be implemented on a system level in a few different ways. Insurance companies should have a diverse group of providers in their network that can meet the language and cultural needs of patients. This list of providers should be readily accessible to patients when they are choosing a primary care or specialist provider. If further research into LC care shows consistent improvement in clinical outcomes in LEP Hispanic adults, then insurance companies could even include a financial incentive for patients to utilize a LC provider. Medical, physician assistant, and nurse practitioner schools can diversify healthcare in their selection process of students. Individual providers need to improve their consistency in utilizing interpreter services.

Patients can and should advocate for themselves to receive care in the language they feel most comfortable in making important health decisions. They are the ones that ultimately carry the burden of their health and healthcare treatment. Since patients are the biggest stakeholders in their health, giving them a voice in shared decision-making is the duty of all healthcare providers.

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Appendix A

Figure A1

Flow Diagram of Article Selection Process

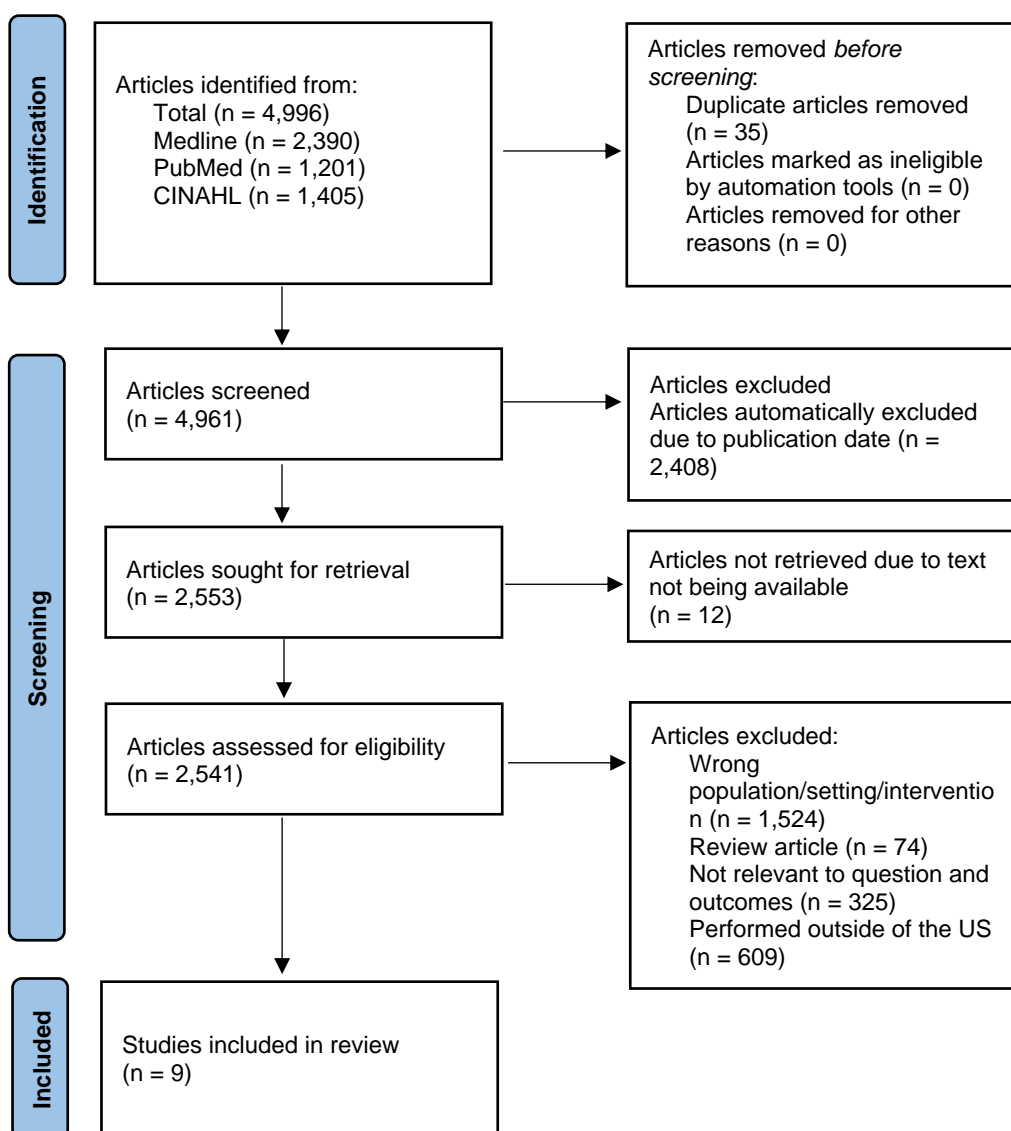


Table A1

Evidence Synthesis Table

Author	Purpose	Frame- work	Design	Sample/ Setting	Methods	Findings	Quality Appraisal/ Limitations	Conclusions/ Application
Fernandez, 2017	To explore the association between patient ethnicity, preferred language, and physician language concordance with adherence to newly prescribed DM medications	None	Retrospective cohort study	21,878 white patients, 5,755 English-speaking Latinos, 3,205 LEP Latinos; over 5 years at a healthcare system in California;	Physician language ability was self-reported; measured nonadherence to new prescribed DM medications; dispensing data from pharmacy utilized to determine adherence; causal directed acyclic graph constructed to minimize confounders; Neighborhood	50.2% of LEP patients with LC physician, 49.8% with LD physician; Latinos had higher rates of poor glycemic control than white patients (LEP 37% and English-speaking Latinos 36%, whites 24%); LEP patients had greater nonadherence to oral meds vs. English-speaking Latinos; 54.2% of LEP Latinos were nonadherent with oral	QAR: 8/10 L: Unable to measure socioeconomic factors of individual patients; patients could have been misclassified in English proficiency; findings may not generalize to settings with less availability of interpreters; interpreter use was not measured; no objective way to	C: No difference in nonadherence results when LEP patients had a LC and LD provider. Latinos generally less likely to adhere to oral diabetic medication. A: Latino patients may face issues with pharmacy logistics, financial barriers, literacy barriers, and language barriers. Access to interpreters and bilingual certified staff may help

Author	Purpose	Frame- work	Design	Sample/ Setting	Methods	Findings	Quality Appraisal/ Limitations	Conclusions/ Application
					Deprivation index to contextualize socioeconomic status; X2 tests for categorical variables, t tests for interval variables; Wilcoxon rank sum tests; Poisson regression models for adjusted relative risk	diabetes medications before the end of follow-up; Inadequate adherence to oral meds (LEP Latinos 60.2 %, 51.7% English-speaking Latinos, 37.5% white patients); no significant differences between LEP concordant and discordant groups for any measure	measure physician Spanish proficiency.	mitigate language barriers. Other factors go into glycemic control including lifestyle factors like nutrition and exercise which were not studied. Interventions need to go beyond language barriers.
Fernandez, 2018	To explore the extent that language barriers can impact lipid and BP control in LEP	None	Retrospective cohort study	2,921 English-speaking Latinos, 542 LEP Latino, 3,896 white patients that participated in DISTANCE	English and Spanish proficiency determined by self-report of patients and physicians; medication adherence	English-speaking Latinos had poorer LDL-C control compared to whites (36.8% vs. 33.7%); no statistically significant	QAR: 7.5/10 L: Easy access to interpreters; most Latinos in study are of Mexican ancestry; LEP sample size was	C: No significant differences in lipid and blood pressure control in LEP patients based on physician LC. All groups had about 33% poor

Author	Purpose	Frame- work	Design	Sample/ Setting	Methods	Findings	Quality Appraisal/ Limitations	Conclusions/ Application
	Latinos with DM			study in healthcare delivery system in California	determined by pharmacy dispensation; LDL-C higher than 100 md/dL defined as poor lipid control; SBP higher than 140 mm Hg defined as poor hypertension control; X2 tests (categorical variables), t tests (continuous variables); Generalized estimating equation for covariates	difference between LEP Latinos and English- speaking Latinos; no difference in lipid control or SBP control among LEP Latinos based on LC with provider. Poor SBP control did not differ between whites vs. English- speaking Latinos vs. LEP Latinos (21.7% vs. 20.0% vs. 16.7%). LEP Latinos had slightly better mean SBP compared to English- speaking	limited; patients not tested for SBP and LDL-C were excluded which could be exclusion bias.	lipid control despite high rates of medication adherence so lipid control may be difficult regardless of language. LDL and SBP control may not be as sensitive to patient-provider communication as glycemic control. A: Effective strategies to improve lipid and blood pressure control need to be devised.

Author	Purpose	Frame-work	Design	Sample/Setting	Methods	Findings	Quality Appraisal/ Limitations	Conclusions/ Application
Holman, 2023	To estimate the association between LEP and DM diagnosis awareness and control of DM and CV risk	None	Retrospective analysis of multi-year survey	5,017 US adults with DM; data from NHANES survey conducted in mobile exam center	Considered controlled: HbA1c <7, BP <130/80, LDL <100 mg/dL or <2.6 mmol/L; categorized into English-speaking, LEP-Spanish (LC provider), LEP-Interpreter (interpreter utilized, not in English or Spanish); Analysis of Variance for continuous variables, Rao-Scott x2 test for categorical variables; Generalized linear models	LEP-interpreter participant more likely to have HbA1c>7; no association between LEP-Spanish and LEP-interpreter in BP control; No difference in DM control between LEP-Spanish and LEP-interpreter	QAR: 5.7/10 L: LEP determined by interpreter use and Spanish-speaking staff. No assessment of English proficiency. Primary language of patient not provided by NHANES.	C: LEP-interpreter were had worse HbA1c and CV risk compared to English-speaking. No significant differences between LEP-Spanish and English-speaking. A: Innovated tools needed to assist patient-provider communication.
Kenny, 2020	To explore follow-up experience and delays in	None	Qualitative study	61 women in 3 healthcare facilities: community, safety-net,	Ethnicities: African American, Chinese, Latina, White.	40% of LEP Spanish/Cantonese received a timely result compared to	QAR: 8.1/10 L: Small sample size	C: Biopsy after a BIRADS 4/5 result has clinical relevance. Experienced

Author	Purpose	Frame-work	Design	Sample/ Setting	Methods	Findings	Quality Appraisal/ Limitations	Conclusions/ Application
	ethnically diverse women			and academic; Data obtained from San Francisco Mammograp hy Registry	Criteria: abnormal mammogram with recommended biopsy, did not decline contact, speaks English, or Cantonese, ages 40-74, no history of breast cancer. Delay defined as more than 30 days after abnormal result; interviewed in primary language on care experience; inductive codes and themes identified	60% of English. 29% of LEP received a delayed result compared to 71% of English. Themes: unidirectional communication limited understanding of next steps and created confusion; language barriers when calling healthcare facility; difficulty understanding medical jargon and procedure; patients feel supported when they are helped in determining and executing next steps		depended on organizational processes and provider communication. Timely follow up was dependent on support mechanism and bilingual personnel. Patients prefer in- person communication, supplemental print material, and an action plan/hotline to ask questions. Healthcare providers who engage directly with patients improve patient experience. Patients report confidence and minimize delays when staff explains results and next steps in same language.

Author	Purpose	Frame- work	Design	Sample/ Setting	Methods	Findings	Quality Appraisal/ Limitations	Conclusions/ Application
								A: Bidirectional communication increases a patients understanding and decreases confusion. Notification letters need to be easily comprehensible in low health literacy.
Luan Erfe, 2017	To evaluate how PMIs affect the quality of care of acute ischemic stroke care received by NEP patients.	No framework discussed	Retrospective study	259 NEP AIS patients in Massachusetts hospital	Quality of care indicators: thrombolytic therapy, DVT prophylaxis, DC on AC for patients with Hx of AF, statin if LDL >100, dysphagia screening, stroke education, smoking cessation,	NEP patients who were not provided PMI were significantly less likely to receive defect-free care. NEP patients without PMI had less consideration for rehabilitation and stroke education documented than.	QAR: 7.4/10 L: Single site with small sample. Institutions has ample PMI resources to begin with. No data on clinician linguistic abilities.	C: NEP patients not provided PMI services were half as likely to receive defect-free AIS care. NEP patients without PMI are less likely to receive stroke education and be considered for rehab. A: Despite research demonstrating benefits of PMI,

Author	Purpose	Frame- work	Design	Sample/ Setting	Methods	Findings	Quality Appraisal/ Limitations	Conclusions/ Application
					rehab assessment. Sample t test and X2 tests used to compare groups; Logistic regression models also utilized.			clinicians continue to use them inconsistently. Disparities in care are occurring with NEP patients.
Menon, 2022	To describe the effect of LC coaching for Spanish- speaking T2DM patients	No framewor k discussed	Randomize d controlled trial	133 Spanish- speakers; diagnosed with T2DM; Federally Qualified Health Centers setting	Control group received standard diabetes care with written materials in Spanish. Intervention group: biweekly coaching phone calls and 3 in- person visits over 6- month period. Coaches	Statistically significant decrease in HbA1c from 10.37% to 8.14% and in PHQ9 and GAD-7 scores; statistically significant increase in diabetes self- efficacy; t-test analyses showed reductions in mean HbA1c;	QAR: 6.4/10 L: DM medications that patients were on differed, and adherence was not measured. Difficult to find students in NP and DNP programs so recruitment expanded to include NPs in practice. Time burden	C: Nurse and NP led health coaching for diabetes self- management in LEP Spanish- speaking adults successfully decreased HbA1c and depression. Intervention group decreased average of a full point in HbA1c. It is feasible to educate practicing NPs with CE credits.

Author	Purpose	Frame- work	Design	Sample/ Setting	Methods	Findings	Quality Appraisal/ Limitations	Conclusions/ Application
					were Spanish-speaking NP or DNP students and BSN nurses and NPs in practice. All completed a baseline survey (PHQ9, GAD-7, Diabetes Self-Efficacy Scale; HbA1c blood test		on busy health coaches.	Phone-based programs increase feasibility for busy people. A: Health coaching program that manages nutrition, physical activity, and medication adherence can significantly decrease patients HbA1c, depression, and anxiety. Coaching program can be led by NPs in their implementation and in the training of registered nurses to become a health coach.

Author	Purpose	Frame- work	Design	Sample/ Setting	Methods	Findings	Quality Appraisal/ Limitations	Conclusions/ Application
Njeru, 2017	To determine the adherence to diabetes outcomes and processes after using IS	No framework discussed	Retrospective cohort study	1,486 interpreter services patients; 11,970 non-IS patients; primary care medical centers setting	EMR were assessed; X2 test, odds ratio, multivariable models, and confidence intervals used	No statistical significance between IS vs non-IS in HbA1c; IS patients more likely to have lower blood pressure.	QAR: 9/10 L: Relied on EMR which had some missing data.	C: IS patients were more likely to adhere to diabetes processes but less likely to meet outcome recommendations. A: Patients with LEP are more likely to have lower socioeconomic status, therefore providers should assess the patient's community resources to understand the barriers they face that prevent them from fulfilling their expected outcomes.
Parker, 2017	To examine changes in	Difference-in-difference	Retrospective cohort study	1605 LEP Latinos who preferred	Data collected from EMR:	LEP Latinos with LC providers who	QAR: 8.3/10 L: Providers self-reported	C: Most groups experienced slight

Author	Purpose	Frame- work	Design	Sample/ Setting	Methods	Findings	Quality Appraisal/ Limitations	Conclusions/ Application
	glycemic, lipid, and SBP in patients with DM who switched from an English-speaking PCP to Spanish-speaking PCP compared to other PCP switches	s framewor k.		Spanish as a language and switched PCP at least once in California in healthcare system	HbA1c, LDL, SBP collected prior to switch date and 12 months post switch. X2 statistics used for categorical variables; analysis of variance or t tests for continuous variables.	switched to LD provider had better LDL and SBP control prior to switch; glycemic control improved 11%, poor glycemic control decreased by 7%, LDL control increased by 9% in LEP patients that switched from LD to LC providers; LC to LD had no differences in glycemic control; LDL increased by 15% in LC to LD provider; no significant changes in SBP	Spanish fluency. IS available in facilities that could have been used by LD PCPs. Unable to verify that LEP patients were speaking in Spanish with LC PCP.	improvement in glycemic control regardless of language concordance. LEP Latinos who switched from LD to LC PCPs had 10% increase in glycemic control. Those who switched from LC to LD had no significant changes in glycemic control. LDL increased by 15% in LC to LD group, compared to 9% in LD to LC group. SBP did not have any significant difference in concordance

Author	Purpose	Frame-work	Design	Sample/Setting	Methods	Findings	Quality Appraisal/ Limitations	Conclusions/ Application
								status. No evidence of harm in switched from LC to LD PCP. A: Rather than creating costly new program to improve glycemic control in LEP Latinos, a switch to a LC PCP can be an effective intervention.
Seible, 2021	To test the effect of patient-provider language concordance on patient satisfaction	None	Randomized controlled trial	83 Spanish speaking adults in oncology clinic	Randomly assigned to 2 study arms: interpretive services and direct-Spanish; Same physicians for both arms; Spanish proficiency certified by third-party; 2 questionnaires	Direct-Spanish reported greater satisfaction than interpretive services (63% vs. 25%); direct-Spanish perceived more opportunity to disclose concerns (4.91 vs. 4.62); direct-Spanish had more physician speech relating	QAR: 8.1/10 L: Small sample size. Only 1 clinic. Specific to Spanish. No script for physician so communication was not standardized.	C: Highest patient satisfaction is with LC providers when compared to interpreter. LC conversation changes history obtainment and has increased number of questions by patient. Interpreter

Author	Purpose	Frame- work	Design	Sample/ Setting	Methods	Findings	Quality Appraisal/ Limitations	Conclusions/ Application
					: PSQ-SF and ISQ; 3 surveys: after first consult, during last week of radiation; during first follow up visit; audio recorded conversations	to patient history and partnering activities; no difference in history solicitation or patient education with interpreter; coded by 2 bilingual staff for intercoder reliability; themes followed Roter Interaction Analysis System		services over time can achieve same results of reducing barriers and improving satisfaction. A: Interpreters are still an appropriate standard of care for standard care despite LC showing improved results. Diversity in providers and foreign-language proficiency can be a solution. Language training can help bridge gap. Administrative changes such as triaging LEP patients to bilingual clinics.

Abbreviations:

A=Application; BSN=Bachelor of Science in Nursing; C=Conclusion; CE=Continuing Education; CV=Cardiovascular; DC=Discharge; DISTANCE=Diabetes Study of Northern California; DM=Diabetes; DNP=Doctor of Nursing Practice; EMR=Electronic Medical Record; GAD-7=Generalized Anxiety Disorder-7; HbA1c=Hemoglobin A1c; IS=Interpreter services;

[illegible]

Appendix B

Rapid Critical Appraisal Questions for Randomized Clinical Trials (RCTs)

Date:

Reviewer:

Article Citation (APA):

PICOT Question:

Overview/General Description of Study

Purpose of Study:

Study Design:

General Description of Study:

Research Question(s) or Hypotheses:

Study Aims:

Sampling Technique, Sample Size, and Characteristics:

Major Variables Studies

Independent Variable(s):

Dependent (outcome) Variable(s):

Variable Analysis Used (include whether appropriate to answer research questions/hypothesis or discover themes):

VALIDITY

1. Are the results of the study valid?

a. Were the participants randomly assigned to the experimental and control groups? Yes

No Unknown

- b. Was random assignment concealed from the individuals who were first enrolling participants into the study? Yes No Unknown
- c. Were the participants and providers blind to the study group? Yes No Unknown
- d. Were reasons given to explain why participants did not complete the study? Yes No Unknown
- e. Were the follow-up assessments conducted long enough to fully study the effects of the intervention? Yes No Unknown
- f. Were the participants analyzed in the group to which they were randomly assigned? Yes No Unknown
- g. Was the control group appropriate? Yes No Unknown
- h. Were the instruments used to measure the outcomes valid and reliable? Yes No Unknown
- i. Were the participants in each of the groups similar on demographic and baseline clinical variables? Yes No Unknown

RELIABILITY

2. What are the results?

- a. How large is the intervention or treatment effect (NNT, NNH, effect size)?

- b. How precise is the intervention or treatment (CI)? _____

APPLICABILITY

3. Will the results help me in caring for my patients?

- a. Were all clinically important outcomes measured? Yes No Unknown
- b. What are the risks and benefits of the treatment? _____
- c. Is the treatment feasible in my clinical setting? Yes No Unknown

d. What are my patient's/family's values and expectations for the outcome that is trying to be prevented and the treatment itself? _____

Would you use the study results in your practice to make a difference in patient outcomes?

- If yes, how?
- If yes, why?
- If no, why not?

Additional Comments/Reflections:

Recommendation for article use within a body of evidence:

Rapid Critical Appraisal Questions for Cohort Studies

Date:

Reviewer:

Article Citation (APA):

PICOT Question:

Overview/General Description of Study

Purpose of Study:

Study Design:

General Description of Study:

Research Question(s) or Hypotheses:

Study Aims:

Sampling Technique, Sample Size, and Characteristics:

Major Variables Studies

Independent Variable(s):

Dependent (outcome) Variable(s):

Variable Analysis Used (include whether appropriate to answer research questions/hypothesis or discover themes):

VALIDITY

1. Are the results of the study valid?

a. Was there a representative and well-defined sample of patients at a similar point in the course of the disease? Yes No Unknown

b. Was follow-up sufficiently long and complete? Yes No Unknown

c. Were objective and unbiased outcome criteria used? Yes No Unknown

d. Did the analysis adjust for important prognostic risk factors and confounding variables? Yes No Unknown

Comments:

RELIABILITY

2. What are the results?

a. What is the magnitude of the relationship between predictors (i.e., prognostic indicators) and targeted outcome? _____

b. How likely is the outcome event(s) in a specified period of time?

c. How precise are the study estimates? _____

APPLICABILITY

3. Will the results help me in caring for my patients?

a. Were the study patients similar to my own? Yes No Unknown

b. Will the results lead directly to selecting or avoiding therapy? Yes No Unknown

c. Are the results useful for reassuring or counseling patients? Yes No Unknown

Comments:

Would you use the study results in your practice to make a difference in patient outcomes?

- If yes, how?
- If yes, why?
- If no, why not?

Additional Comments/Reflections:

Recommendation for article use within a body of evidence:

Rapid Critical Appraisal Questions for Qualitative Evidence

Date:

Reviewer:

Article Citation (APA):

PICOT Question:

Overview/General Description of Study

Purpose of Study:

Study Design:

General Description of Study:

Research Question(s) or Hypotheses:

Study Aims:

Sampling Technique, Sample Size, and Characteristics:

Major Variables Studies

Independent Variable(s):

Dependent (outcome) Variable(s):

Variable Analysis Used (include whether appropriate to answer research questions/hypothesis or discover themes):

VALIDITY

1. Are the results of the study valid (i.e., trustworthy and credible)?

a. How were study participants chosen?

b. How were accuracy and completeness of data assured?

c. How plausible/believable are the results?

i. Are implications of the research stated? Yes No Unknown

1. May new insights increase sensitivity to others' needs? Yes No Unknown

2. May understandings enhance situational competence? Yes No Unknown

d. What is the effect on the reader?

1. Are results plausible and believable? Yes No Unknown

2. Is the reader imaginatively drawn into the experience? Yes No Unknown

RELIABILITY

2. What were the results?

a. Does the research approach fit the purpose of the study? Yes No Unknown

i. How does the researcher identify the study approach? Yes No Unknown

1. Are language and concepts consistent with the approach? Yes No Unknown

2. Are data collection and analysis techniques appropriate? Yes No Unknown

ii. Is the significance/importance of the study explicit? Yes No Unknown

1. Does review of the literature support a need for the study? Yes No Unknown

2. What is the study's potential contribution?

iii. Is the sampling strategy clear and guided by study needs? Yes No Unknown

1. Does the researcher control selection of the sample? Yes No Unknown

2. Do sample composition and size reflect study needs? Yes No Unknown

b. Is the phenomenon (human experience) clearly identified?

i. Are data collection procedures clear? Yes No Unknown

1. Are sources and means of verifying data explicit? Yes No Unknown

2. Are researcher roles and activities explained? Yes No Unknown

ii. Are data analysis procedures described? Yes No Unknown

1. Does analysis guide direction of sampling and when it ends? Yes No Unknown

2. Are data management processes described? Yes No Unknown

c. What are the reported results (description or interpretation)?

i. How are specific findings presented?

1. Is presentation logical, consistent, and easy to follow? Yes No Unknown

2. Do quotes fit the findings they are intended to illustrate? Yes No Unknown

ii. How are overall results presented?

1. Are meanings derived from data described in context? Yes No Unknown

2. Does the writing effectively promote understanding? Yes No Unknown

APPLICABILITY

3. Will the results help me in caring for my patients?

a. Are the results relevant to persons in similar situations? Yes No Unknown

b. Are the results relevant to patient values and/or circumstances? Yes No Unknown

c. How may the results be applied in clinical practice?

Would you use the study results in your practice to make a difference in patient outcomes?

- If yes, how?
- If yes, why?
- If no, why not?

Additional Comments/Reflections:

Recommendation for article use within a body of evidence: