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Cultural Competence in Nursing and Laboratory Services: A Systematic Review of the Influence of Cultural Factors on Patient Interactions and Health Outcomes

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Abstract

Background: Global migration and increasing cultural diversity have made cultural competence a necessary component of quality health care. In clinical practice, nursing and laboratory services are major patient interfaces where culturally mediated beliefs, behaviors, and communication styles directly influence the process of care. Mismatch in these interactions can lead to misdiagnosis, non-adherence, and health disparities.

Aim: This systematic review aims to synthesize the literature between 2015 and 2025 to understand how cultural factors impact patient interactions in nursing and laboratory practice and to evaluate strategies for developing cultural competence in these services.

Methods: A systematic search was conducted in PubMed, CINAHL, PsycINFO, and Scopus. The search terms used were "cultural competence," "nursing," "phlebotomy," "laboratory medicine," "patient interaction," "health disparities," and "cultural factors."

Results: Cultural factors significantly impact care, including explanatory models, communication barriers, religion-based preferences, and family involvement. These factors affect patient consent, compliance, and follow-up care. Interventions like professional medical interpretation, cultural competency training, and culturally tailored patient education improve patient satisfaction and diagnostic accuracy.

Conclusion: Cultural competence is crucial for safe, effective, and equitable nursing and laboratory practice. Institutional policy should include trained interpreters, culturally sensitive protocols, and a diverse workforce, promoting cultural humility.

Keywords: cultural competence, nursing, laboratory services, phlebotomy, health disparities, patient communication, cultural humility, diagnostic error..

1. Introduction

The 21st-century healthcare setting is characterized by unprecedented cultural and linguistic diversity. Driven by globalization, migration, and the recognition of longstanding health disparities among minority populations, the demand for culturally competent care has moved from the periphery to the center of quality and safety priorities (Betancourt et al., 2005). Cultural competence in healthcare has been defined as the ability of systems and providers to deliver care that is socially, culturally, and linguistically suitable for patients (Kaihlanen et al., 2019; Mohammed Abu Haddash, 2025). Its absence can lead to misunderstandings, diagnostic errors, non-adherence to treatment, and exacerbation of health disparities.

In the complex healthcare environment, nursing and laboratory services represent two of the most prevalent and meaningful points of patient contact. Nurses hold the front lines of patient assessment, education, and advocacy, while laboratory staff, including phlebotomists and medical laboratory scientists, conduct the behind-the-scenes activities of specimen collection and analysis that form the basis of most medical diagnoses. The interactions in these settings, while often brief, are highly vulnerable to

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cultural mistakes. A patient's willingness to undress for an examination, provide a urine specimen, follow a period of fasting for a blood test, or consent to a blood transfusion is greatly influenced by their cultural background, values, and beliefs (Abutalib, 2025).

Despite the clear connection between culture and clinical outcomes, the adoption of cultural competence has been inconsistent in these professions. Principles of cultural competency have become more incorporated into nursing education, yet their application in dynamic clinical environments remains challenging (Truong et al., 2014). In laboratory medicine, analytical accuracy has been the focus, while socio-cultural determinants of the pre-analytical phase—the phase where most errors occur and where the cultural elements are most pronounced—have been secondary in priority (John et al., 2025). A failed interaction during blood collection due to a language barrier or misunderstood cultural expectation can compromise specimen integrity as certainly as a malfunctioning analyzer.

This systematic review synthesizes the available evidence to explore the multifaceted ways that cultural factors affect patient interactions in laboratory and nursing practice. It will specify the specific cultural barriers encountered, analyze their impact on clinical processes and patient outcomes, and determine the efficacy of interventions aimed at improving cultural competence. By addressing these two major areas together, this review aims to provide an integrated view of the challenges and opportunities for the delivery of truly patient-centered, equitable care along the diagnostic and therapeutic continuum.

Methodological Framework

This review was conducted as a narrative systematic review to allow for a broad synthesis of a heterogeneous literature. A systematic search of the electronic databases PubMed, CINAHL, PsycINFO, and Scopus was performed for studies published from 2015 to 2025. The search strategy used a combination of keywords and Medical Subject Headings (MeSH) like: ("cultural competency" OR "cultural humility" OR "transcultural nursing" OR "cultural diversity") AND ("nursing" OR "phlebotomy" OR "laboratory services" OR "clinical laboratory techniques" OR "specimen collection") AND ("patient interaction" OR "communication barriers" OR "health disparities" OR "patient satisfaction") AND ("quality of health care" OR "diagnostic errors"). Reference lists of the included articles were checked manually for identifying additional relevant studies.

The eligibility criteria were: (1) original research studies (qualitative, quantitative, or mixed methods), systematic reviews, or meta-analyses; (2) explicit focus on cultural aspects in the field of nursing care, laboratory services, or phlebotomy; (3) publication in the English language between 2015-2024. Articles were excluded if they were solely on medical students or doctors with no comparative data on nursing or laboratory staff, or if they were editorials or opinion articles not presenting empirical data. The retained articles were thematically analyzed to identify prevalent barriers, impacts, and effective intervention measures.

Foundational Concepts: From Cultural Competence to Cultural Humility

The conceptual model for this review is predicated on the path from "cultural competence" to "cultural humility." Cultural competence has traditionally been envisioned as a set of attainable skills, including familiarity with specific cultural practices, attitudes of respect for difference, and cross-cultural communication abilities (MAR, 2019). While this model has been helpful, it is risky in stereotyping by promoting a checklist approach to culture.

Thus, cultural humility has come into being. It is a lifelong process of self-reflection and self-criticism, a balancing of power imbalances in the clinician-patient relationship, and the building of mutually beneficial partnerships with communities (Foronda et al., 2016). This paradigm shift is necessary for nursing and laboratory practice. It acknowledges the fact that a provider cannot be fully "competent" in every culture but encourages them to always address each patient with humility, curiosity, and an openness to hear their unique point of view. This involves taking a few moments to ask open-ended questions like, "Help me understand what this illness means to you," rather than making assumptions according to a patient's assumed background or ethnicity (Yeager & Bauer-Wu, 2019).

A closely related core idea is that of structural competency, which demands moving beyond one-on-one interactions to observe how larger societal structures (e.g., immigration policy, socioeconomic marginalization, institutional racism) shape clinical interactions and health outcomes (Waldron, 2024). For example, a patient's hesitation to provide personal information may be due to immigration status and not necessarily a distrust of the healthcare system itself. Understanding these levels is essential for a comprehensive approach to culturally responsive care.

Major Cultural Determinants Influencing Patient Interactions

The patient encounter, especially in high-volume environments such as nursing floors and diagnostic labs, is a delicate balance of technical proficiency and interpersonal interaction. This equilibrium is significantly influenced by cultural determinants that affect a patient's understanding of health, disease, and the medical system itself. These factors are not merely background variables but active elements that can make or break a clinical interaction. Inattention to these cultural aspects can lead to a fundamental breakdown in communication, destroy trust, and jeopardize the quality and safety of care. This chapter discusses the most salient cultural factors identified in the literature, providing a close analysis

of their expression and meaning in nursing and laboratory contexts.

Health Beliefs and Explanatory Models

Every individual operates within a framework of knowledge regarding what is the cause of disease is, how it should be treated, and what health is. These "explanatory models" are culturally determined and can be extremely different from the biomedical model that underlies Western medicine. Where the models disagree, a gap between clinician and patient is established that is difficult to bridge. For instance, the humoral theory of disease, prevalent in many Latino, Asian, and Arab cultures, dictates that health is the outcome of a balance between hot and cold qualities, not just in the body but also in food, medicine, and environmental conditions (Khatib et al., 2023). A nurse may see a post-partum patient who will refuse to drink "cold" water or juice for fear of retarding their recovery, or a patient who will refuse to accept a diagnosis of a "hot" infection if it will be treated with a "hot" antibiotic. In the laboratory, a patient will refuse to follow a pre-procedure fast if the "clear liquids" they are to consume are cold and therefore harmful to their condition.

Another intense belief is genetic fatalism, whereby diabetes, hypertension, or cancer is viewed as an inevitable family illness, for which preventive health practices or complex treatment seem futile (Egede et al., 2025). A nurse educator will struggle to motivate a patient to implement dietary changes to manage diabetes if the patient believes that their fate is sealed. This fatalism can also affect the uptake of genetic screening programs, since patients might not see any advantage to finding out a risk that they consider they are not able to change. Moreover, the mind-body dualism is not a universally shared concept across cultures. Psychological and emotional distress, in most cultures, is expressed in physical symptoms—a process that has been termed somatization. A patient presenting with chronic, unexplained pain, dizziness, or fatigue may have a panel of normal laboratory tests. The clinician, unaware of this cultural context, may ascribe the patient's symptoms as "non-organic," which and lead to patient frustration, repeat visits, and a therapeutic relationship breakdown when, in fact, questioning the patient about life stressors and his or her emotional state could lead to more pertinent assistance (Kleinman & Benson, 2016). Figure 1 illustrates the framework of cultural competence and humility in nursing & laboratory services.

Delivery of safe healthcare depends on effective communication, which comprises both linguistic understanding and non-verbal communication. The most evident barrier is Limited English Proficiency (LEP). For LEP patients, the clinical environment turns out to be isolating and frightening. Relying on ad-hoc interpreters, such as family members or bilingual staff, is an unsafe practice. Family members, especially children, will omit sensitive information, provide inaccurate translations of medical jargon, or censor information based on their own need to protect the patient (De Moissac & Bowen, 2019). This leads to critical errors in patient history, confusion about medication side effects, and a complete absence of truly informed consent. In the laboratory, the consequences are equally severe. Miscommunication about how to collect a 24-hour urine—i.e., to discard the first void or to store the specimen on ice—will render the test results useless and delay diagnosis. A client who has not heard the term "fasting" before may eat a light meal, rendering lipid profile or blood glucose levels invalid and potentially leading to an incorrect diagnosis.

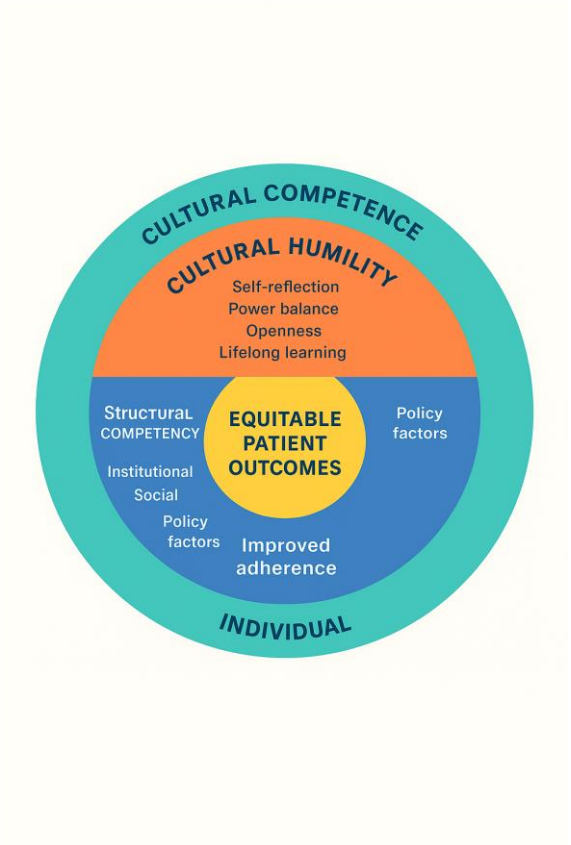

Figure 1: Framework of Cultural Competence and Humility in Nursing & Laboratory Services

Language and Communication Barriers

Aside from verbal language, non-verbal communication is also highly culturally encoded. These behaviors as physical space, touch, and eye contact, all carry varying meanings. Direct and sustained eye contact with an authority figure like a clinician is interpreted in most Asian, Native American, and Middle Eastern cultures as challenging or confrontational (Tavallali et al., 2014). A phlebotomist or nurse trained in the West who has been taught that eye contact conveys honesty, and interest can mistakenly interpret a patient's avoidance of eye contact as disinterest, dishonesty, or confusion. Similarly, a warm, comforting touch on the shoulder or arm by a phlebotomist can be interpreted as a grave

infringement on personal space by a patient from a culture with extremely formal laws about physical contact between strangers. These subtle misunderstandings can create an undercurrent of unease and suspicion right away, setting a negative tone for the entire interaction.

Religious and Spiritual Influences

Religious beliefs typically provide a schema for understanding life, death, and the body and often dictate specific health behaviors and care preferences that clinicians must respect. Modesty and gender concordance are the prime concerns for patients from Islamic, Orthodox Jewish, and some conservative Christian and Hindu cultures. The requirement for a same-sex provider for procedures of an intimate nature, such as catheterization, pelvic examinations, or even disrobing for an ECG, is a deeply held religious and cultural conviction (Padela & Zaidi, 2018). For a female, having a male phlebotomist present to draw blood would be extremely distressing and may lead to her refusing the procedure altogether, potentially delaying crucial diagnostics. Health systems must have policies, e.g., the availability of chaperones and the ability to meet requests for gender-concordant staff, to accommodate these beliefs.

Some religious doctrines explicitly prohibit or restrict common medical interventions. Most notable, perhaps, Jehovah's Witnesses' refusal of blood transfusions based on their interpretation of biblical scripture requires meticulous, anticipatory care planning (Hoffman, 2016). This necessitates early consideration of blood-conserving strategies and the use of blood substitutes, with the patient, the patient's family, and the patient's religious advisors. There are also more general cultural or religious beliefs about blood as a vital force, apart from religious doctrine, that may make patients of many different backgrounds hesitant to have blood "drawn" in the event that it will make them weak or drain their energy. In addition, religious fasting, such as the Islamic holy month of Ramadan from dawn to dusk, can be in direct contradiction to commanded fasting for laboratory tests or medication that needs to be ingested with food (Hassanein et al., 2017). This requires the laboratory or nurse practitioner to engage in a collaborative discussion with the patient to find a compromise, e.g., early morning timed blood draws or medication scheduling, that respects both their religious needs and medical needs.

Family Dynamics and Decision-Making

The Western biomedical ethical principle of patient autonomy, in which the individual is positioned at the center of all decision-making, is not a universal norm. In the majority of Latino, Asian, African, and Middle Eastern cultures, there is a philosophy of familism and collective decision-making. In these cultures, the family is the primary decision-making unit in health matters. Families often request that a serious diagnosis, such as a terminal cancer, be withheld from the patient to avoid causing them psychological distress (Johnstone & Kanitsaki, 2006). This presents a significant ethical dilemma for physicians and nurses, who are sworn to the principle of informed consent and the patient's right to know. This must be negotiated carefully, with a possible compromise of talking to the family first and then adopting a gradual and culturally appropriate staged approach to telling the patient.

Side by side with this is the function of eldership and hierarchy within the family. In the majority of patriarchal cultures, male elder respect is a supreme value. This can be manifested in a clinical setting when a competent adult female patient deflects all questions and decisions to her husband or father. She might not consent to a procedure, even a simple blood test, without his explicit permission (Al Atiyyah et al., 2024). A clinician who insists on dealing directly with the patient, in an effort to maintain her autonomy, will instead generate family conflict and increase the patient's anxiety. This hierarchical structure needs to be comprehended to obtain cooperation and ensure smooth care, often by going through the identified family decision-maker while nonetheless ensuring that the patient's own voice is heard and respected. Table 1 presents the direct clinical consequences of significant cultural factors in nursing and laboratory practice. It illustrates how beliefs and practices related to health and illness, communication, religion, and family structure can have a direct influence on patient behavior, compliance, and the conduct of simple clinical procedures, with a final impact on diagnostic accuracy and therapeutic efficacy.

Table 1: Clinical Impact of Cultural Factors on Nursing and Laboratory Procedures

Cultural Factor	Impact on Nursing Care	Impact on Laboratory Services
Health Beliefs (e.g., Humoral Theory)	Patient may refuse "cold" IV fluids or medications post-partum; may use traditional remedies that interact with prescribed drugs.	Patient may not comply with "cold" liquid-only fast before a test; may be hesitant to provide specimens believed to contain vital energy.
Language Barriers	Inability to obtain an accurate history; poor understanding of discharge instructions leading to readmission.	Misunderstanding of complex collection instructions (e.g., 24-hour urine, sputum); incorrect patient identification.
Religious Modesty	Refusal of physical exam by opposite-gender nurse; anxiety during peri-care.	Refusal of phlebotomy by opposite-gender staff; need for chaperones; patient may not expose arm/vein adequately.

Family-Centric Decision Making	Family may request withholding of a poor prognosis from patient; multiple family members may be present during rounds, challenging confidentiality.	A family member may attempt to provide consent for a competent adult; may answer questions directed at the patient, compromising history.
Genetic Fatalism	Lack of engagement in preventive health education (e.g., smoking cessation, diet for diabetes).	Reluctance to undergo genetic testing; belief that "what will be, will be" reduces follow-up on abnormal results.

Consequences of Culturally Incompetent Care

The failure to deal with cultural issues in clinical interactions has serious, measurable consequences for patient safety and the health system. The pre-analytical phase, which includes test ordering, patient preparation, and specimen collection, is the most critical period in laboratory medicine, accounting for up to 70% of laboratory errors (Alsharari et al., 2024). Cultural issues are a prime offender. Miscommunication about fasting will lead to lipemic samples, invalidating triglyceride and other lipid tests. Muddled instructions for a clean-catch urine sample will lead to contamination and a wrongful diagnosis of a urinary tract infection. Furthermore, a patient's intake of traditional herbal supplements, which they may not think to report, will interfere with laboratory testing, leading to falsely higher or lower results (Simundic et al., 2018; Dasgupta, 2019).

If patients are not educated or do not agree with the treatment regimen prescribed, they will not follow it. Culturally based misconceptions are one of the major reasons for non-adherence. A patient who believes that their hypertension is caused by "nerves" may not see the value in taking daily medication. A patient who feels that a screening colonoscopy is shameful and intrusive may not appear for the procedure. This leads to delayed diagnosis, poor management of chronic diseases, and poor health outcomes (Alkhamees & Alasqah, 2023).

Culturally insensitive encounters generate distrust in the healthcare system. Patients who feel disrespected, ignored, or stereotyped are less likely to follow up on care, obtain preventive services, or recommend the facility to others (Ahmed et al., 2018). This disenchantment further worsens the already prevalent health disparities, and minority and immigrant groups become increasingly alienated from mainstream care. The cumulative effect of diagnostic error, non-adherence, and poor patient engagement is an added expense. Preventable repeat testing, treatment of preventable late disease, and high hospital readmission rates all place an enormous financial burden on the healthcare system (LaVeist et al., 2011; Versey, 2023).

Strategies for Developing Cultural Competence: A Multi-Level Framework

To address the immense impact of cultural factors on patient care, an integrated, systematic, and multi-level intervention is required. Isolated efforts are not sufficient without being supported by robust institutional systems and an underlying transformation of organizational culture. A successful strategy must tackle, in tandem, frontline clinicians' knowledge and skills, the policies and infrastructure of the healthcare organization, and the composition and culture of the workforce in the long term. This framework combines those elements to advance cultural competence from theory into real practice, permeating all patient interactions (Figure 2).

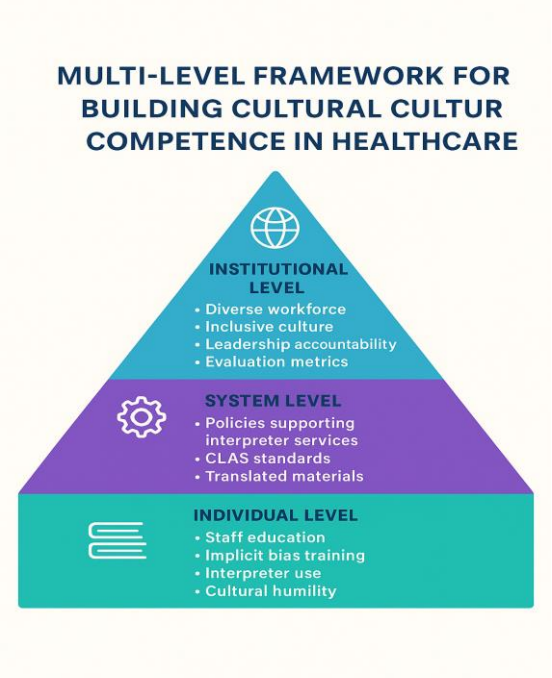

Figure 2: Multi-Level Framework for Building Cultural Competence in Healthcare

Essential Education and Training for Health Care Professionals

Formal education provides the cornerstone of cultural capacity building, but its design must move assertively away from outdated, categorical paradigms that can unwittingly perpetuate stereotypes. Current training models emphasize the cultivation of cultural humility, a process of lifelong self-reflection and self-criticism that enables providers to recognize the limits of their own knowledge and to treat each patient as a unique individual (Foronda et al., 2016). Effective training sessions don't consist of memorizing cultural information but of acquiring a responsive and adaptive skill set.

At the center of this is skill-based, experiential training that equips employees with directly applicable tools. This includes extensive training in the use of professional interpreter services in a way that providers are trained to speak directly to

the patient in the first person and use the interpreter as a conduit, not as an actor in the conversation (Fallatah et al., 2024). Instruction involves understanding models for conducting a brief cultural assessment, such as the LEARN model (Listen, Explain, Acknowledge, Recommend, Negotiate), which encourages a collaborative rather than a prescriptive relationship. Moreover, implicit bias training has been a critical component, allowing nurses and laboratory staff to uncover and counter unconscious associations that can subtly influence clinical decision-making, communication, and the quality of care delivered to patients from diverse backgrounds of racial, ethnic, or social groups (FitzGerald & Hurst, 2017).

Simulation and experiential learning are invaluable in integrating these skills. By working with standardized patients from diverse backgrounds, staff can practice navigating difficult conversations—such as delivering a grim diagnosis to a family that observes full disclosure or obtaining consent from a patient who defers to a family elder—in a psychologically safe environment where feedback and skill refinement can occur (Markey et al., 2021).

System-Level Interventions and Supportive Infrastructure

Individual competence is not maintained without an organizational system that actively demands and enforces fair practices. The single most critical system-level intervention is access to and mandatory utilization of professional interpreter services. The standard of care for LEP patients is no longer debatable; it mandates institutional investment in robust video and telephone interpretation platforms, with policies that firmly prohibit the use of family members or untrained bilingual staff for clinical communication (De Moissac & Bowen, 2019). Making these services seamlessly part of clinical workflow, for instance, with interpretation equipment readily available at nursing stations and phlebotomy carts, is essential for compliance.

In a more macro sense, health care organizations should adopt an explicit design for equity by implementing the National Standards for Culturally and Linguistically Appropriate Services (CLAS). These standards provide a specific action plan, mandating activities that include systematic data collection on patients' race, ethnicity, and language preference; the development of a diversity and inclusion strategic plan; and routine organizational self-assessments (Schiaffino et al., 2020). Such structural commitment ensures that cultural competence is not a stand-alone initiative but is integrated into the organization's objectives and performance measures. Another tangible system-level approach is the creation and dissemination of culturally and linguistically suitable patient materials. These involve translating consent forms, pre-procedure instructions, and patient education brochures into the most prevalent languages within the community served. Beyond translation, this includes rendering content health-literate, with plain language, clear pictograms that are easy to understand, and images that reflect the diversity of the patient population, so that critical information is accessible and understandable to all (Sudore et al., 2018).

Creating a Diverse Workforce and Welcoming Environment

A transformational, long-term strategy for cultural competency is the creation of a healthcare workforce that is representative of the patient population it serves. Workforce diversity initiatives should focus on targeted recruitment, retention, and promotion of underrepresented minority nurses, phlebotomists, and laboratory scientists. Evidence repeatedly shows that patients have higher trust, satisfaction, and perceived empathy when they receive care from clinicians who share their linguistic or cultural heritage (Alshaharni et al., 2024). A more diverse workforce also contributes a wider range of perspectives to problem-solving and serves as an informal, internal resource for cultural knowledge.

Yet recruiting a diverse workforce is only the first step; it must be accompanied by an inclusive institutional culture where all staff members feel valued, respected, and empowered to contribute. This requires proactive steps to address microaggressions, structural barriers to advancement, and work-life balance policies that are sensitive to different cultural contexts. When underrepresented personnel thrive, they directly improve patient care and also act as role models of inclusivity, improving the learning climate for colleagues, creating a positive feedback loop that continually supports cultural humility and equity principles within the organization. Table 2 provides a side-by-side summary of key interventions used to build cultural competence, outlining their key elements, evidence-proven outcomes, and actual-world challenges to execution. It is utilized as a map for healthcare organizations to select and evaluate interventions that target individual staff, systemic structures, and workforce composition.

Table 2: Evaluating Interventions to Improve Cultural Competence in Healthcare Organizations

Intervention Type	Key Components	Measured Outcomes	Challenges & Limitations
Staff Training & Education	Workshops on cultural humility, implicit bias training, skills for using interpreters, and case-based learning.	↑ Self-reported confidence in cross-cultural care; ↑ Use of interpreter services; ↑ Patient satisfaction scores (Kaihlanen	Knowledge does not always translate to behavior change; it can be resource-intensive; one-time training has limited long-term impact.

		et al., 2019; Markey et al., 2021).	
Professional Interpreter Services	Investment in video/telephone interpretation platforms; policies mandating use for LEP patients; training staff on how to use interpreters.	↓ Communication errors; ↑ Patient comprehension and adherence; ↑ Quality of care ratings; reduced legal risks (De Moissac & Bowen, 2019).	Perceived as time-consuming, the cost of services, and technological barriers.
Culturally Tailored Materials	Translating and simplifying patient education; using visual aids and pictograms; involving community members in design.	↑ Patient knowledge and recall; ↑ Adherence to preparation instructions (e.g., for colonoscopy); ↑ Collection of accurate specimens (Sudore et al., 2018).	Cost of development and updating; ensuring cultural, not just linguistic, appropriateness.
Workforce Diversity Initiatives	Targeted recruitment; mentorship programs; policies to support inclusion and address discrimination.	↑ Patient satisfaction and trust; ↑ Provider cultural knowledge sharing; improved team problem-solving (Alshaharni et al., 2024).	Long-term strategy; requires deep institutional commitment to address systemic barriers.

Challenges and Future Directions

Despite the apparent need and growing evidence base, there are significant challenges in the universal application of culturally competent practices. Among the key obstacles are the financing of professional interpreters and training for staff on a continuous basis, which are viewed as costs rather than investments. Furthermore, institutional resistance and the absence of leadership commitment might discourage attempts to modify entrenched practices. There is also the continued challenge in measuring impact; while patient satisfaction is a common metric, directly attributing cultural competence interventions to hard clinical outcomes remains methodologically challenging (De-María et al., 2024).

Future directions must include the integration of technology, such as AI-powered real-time translation software and sophisticated patient portals that offer personalized, language-concordant education. Research must also prioritize the development and testing of standard metrics for cultural competence at both the individual and organizational levels. Most importantly, the field must advance from cultural competence towards a framework of structural competency, wherein policies aimed at the social determinants of health disparities, such as poverty, racism, and limited access to education, are promoted (Sukhera et al., 2022).

Conclusion

In summary, cultural matters are not secondary concerns but prime determinants of success in nursing and laboratory care. They influence every step of the care process, from the style of the initial greeting to the validity of a diagnostic test and the long-term management of health. Culturally incompetent interactions are not merely impolite; they are risky, and they lead to diagnostic errors, non-adherence, and the persistence of health disparities. The evidence is clear: the cultivation of cultural humility, supported by robust systems like professional interpretation and personalized patient materials, is both a moral and practical imperative. For nurses and laboratory technicians, whose professions are built on a foundation of accuracy and trust, meeting this challenge is central to fulfilling their mission of providing truly high-quality, equitable, and patient-centered care to all.

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