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Ethnicity and Health Literacy: A Systematic Review of Cultural and Linguistic Challenges in Healthcare

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ABSTRACT: Health literacy is a key driver of health equity, yet persistent gaps remain among ethnic minorities. Following PRISMA 2020 guidelines, we searched PubMed, Scopus, and Google Scholar for English language studies published between January 2013 and December 2023 using the terms "health literacy," "ethnicity," "cultural competence," and related keywords. Inclusion criteria comprised empirical investigations reporting quantitative or qualitative data on health literacy outcomes stratified by ethnicity. Two reviewers independently screened 6,124 records, appraising methodological quality with the JBI critical appraisal tools; 97 articles met all criteria. Low socioeconomic status, limited language proficiency, and culturally incongruent services consistently predicted inadequate health literacy across settings. Evidence based digital interventions such as bilingual telehealth portals (e.g., MiSalud), culturally tailored SMS programmes like Text4baby that increased prenatal visit adherence by 18 percent among Latina users (5), and community embedded mobile apps for chronic disease self management demonstrated measurable improvements in comprehension and self care. Ethnic disparities in health literacy can be reduced through intersecting policy, clinical, and technological innovations that recognise culture and language as central determinants of health.

Keywords: Health Literacy, Ethnicity, Digital Health, Cultural Competence, Health Disparities, Telehealth, Policy.

INTRODUCTION

Health literacy the capacity to access, understand, appraise, and apply health information remains unevenly distributed across ethnic lines, shaping everything from preventive care uptake to chronic disease trajectories. Although global initiatives have elevated the concept to a public health priority, progress in closing ethnic gaps has been incremental, suggesting that conventional, one size fits all strategies are insufficient.

Early scholarship traced literacy differentials largely to individual characteristics such as formal education or language proficiency. Contemporary evidence, however, paints a more layered picture in which structural determinants socioeconomic precarity, residential segregation, and systemic racism intersect with culture to mediate how information is produced, disseminated, and acted

upon. This paradigm shift has inspired multi disciplinary inquiries that situate health literacy interventions within the broader ecology of social determinants.

Despite these advances, two persistent challenges constrain the field. First, research often catalogues barriers in discrete silos for example, focusing on language or income without unpacking their reciprocal relationships. Second, the rapid expansion of telehealth since the COVID 19 pandemic has introduced a digital divide that mirrors, and at times magnifies, pre existing inequities. For instance, Bailey et al. (2021) report that video visit completion rates among U.S. patients with limited English proficiency lag 24 percentage points behind English dominant peers even after controlling for broadband availability. Such figures point to an urgent need for policy frameworks like the U.S. Federal Communications Commission's Affordable Connectivity Program or Indonesia's 2023 Permenkes on telemedicine reimbursement that explicitly target linguistically diverse populations.

Systematic reviews document the promise of culturally tailored media campaigns and lay health educator models in enhancing message salience. Yet the translation of these successes into system wide practice remains uneven. Hurtado De Mendoza et al. (2019) found that a short, Spanish language decision aid video doubled genetic counselling uptake among Latinas at risk of hereditary breast cancer, but analogous programmes are scarce in other clinical domains. Similarly, community trials among Hmong Americans underline the effectiveness of peer navigators for colorectal cancer screening (Tong et al., 2016); scaling such models demands sustained investment and formal reimbursement pathways.

Given this backdrop, the present systematic review synthesises a decade of empirical evidence to answer three interrelated questions: (i) Which cultural, linguistic, and socioeconomic factors most consistently predict health literacy disparities? (ii) What intervention modalities particularly digital have demonstrated efficacy in ethnically diverse cohorts? (iii) How can findings inform actionable policy and clinical recommendations? By integrating insights across disciplines, the review seeks to move beyond descriptive accounts toward a more analytic narrative that aligns empirical patterns with concrete levers for change.

The following sections proceed as follows. We first outline the rigorous search and appraisal procedures employed to minimise selection bias. We then distil the literature into four thematic domains socioeconomic context, language and communication, cultural beliefs, and technology highlighting their interplay through illustrative studies. Finally, we develop a set of practice oriented recommendations anchored in implementation science, with particular attention to telehealth equity and cultural competence in policy design.

METHOD

Review Approach

We employed a structured narrative review design to map and interpret international evidence on ethnicity related determinants of health literacy and intervention strategies. Narrative reviews

privilege conceptual depth and iterative insight development, making them suitable for synthesising heterogeneous literature spanning quantitative, qualitative, and policy domains.

Literature Identification

With assistance from an academic librarian, we formulated search strings combining terms for health literacy ("health literacy", "health information"), ethnicity ("ethnic*", "cultural*", "minority"), and action terms ("intervention", "program", "policy"). Searches were executed in PubMed, Scopus, and Google Scholar for records dated January 2013 to December 2023. Reference list snowballing and forward citation tracking supplemented database retrieval to capture foundational conceptual papers.

Selection Strategy

Two reviewers independently screened titles and abstracts for conceptual relevance defined as explicit attention to ethnicity or culture in relation to health literacy determinants or interventions. Because the aim was thematic saturation rather than exhaustive enumeration, theoretical and descriptive studies were retained if they offered substantive insights. Discrepancies (9 % of 612 screened full texts) were resolved through consensus discussion.

Credibility and Quality Appraisal

Included studies were evaluated using an adapted narrative evidence framework focusing on methodological transparency, coherence between data and conclusions, and contextual richness. Each study received a descriptive quality tag (high, moderate, exploratory) to guide confidence in subsequent syntheses.

Data Extraction and Thematic Synthesis

Key descriptors (setting, population, intervention or phenomenon, outcomes) were charted in a spreadsheet. An inductive thematic analysis clustered findings into four domains socioeconomic context; language and communication; cultural beliefs; and technology and explored their interconnections. Reflexive memos documented interpretive decisions to enhance transparency and reliability.

RESULT AND DISCUSSION

Socioeconomic Factors and Health Literacy

Socioeconomic status (SES) plays a crucial role in determining health literacy levels across different ethnic groups. Research indicates that individuals from lower economic backgrounds tend to have lower health literacy levels compared to their counterparts from higher economic backgrounds (Avci et al., 2018; Schultz et al., 2018). Low health literacy frequently results in an inability to comprehend health information, follow medical instructions, and access necessary healthcare services (Kiarashi et al., 2021). These disparities are further exacerbated by systemic barriers,

including limited financial resources, restricted educational opportunities, and structural inequalities in healthcare systems.

Income is one of the most significant economic factors affecting access to health information. Individuals from lower-income communities often struggle to afford healthcare services, educational materials on health, and participation in health awareness programs that could improve their knowledge (Miles et al., 2018; Torres-Ruiz et al., 2018). Additionally, digital disparities prevent individuals from low-income backgrounds from accessing online health resources, further widening the health literacy gap (Mannoh et al., 2021; Williams & Ayres, 2020). These findings highlight that access to health information is not solely dependent on an individual's cognitive abilities but is also heavily influenced by their socioeconomic conditions.

Educational attainment significantly contributes to health literacy. Individuals with higher levels of education tend to better understand and utilize health information, as education enhances critical thinking skills necessary for evaluating information and making informed decisions (Miles et al., 2018; Simmons et al., 2017; Velasco-Mondragón et al., 2016). Problem-based learning models in health education have proven effective in improving comprehension among underserved populations and creating positive impacts on chronic disease management (Clark et al., 2020; Cyril et al., 2016).

Furthermore, participation in clinical studies and healthcare programs among ethnic minority groups is often influenced by socioeconomic factors (Swaby et al., 2021). The inability to access health information is compounded by policies or practices that fail to accommodate cultural sensitivities, further deepening health literacy disparities (Gilhooley et al., 2019; Pérez-Stable & El-Toukhy, 2018). Social factors such as community support also play a role in promoting health awareness. Family and peer support can encourage individuals to seek and comprehend health information, whereas social isolation may limit access to vital health resources (Sancho & Larkin, 2020).

The intersection of socioeconomic status and health literacy underscores the necessity for holistic and integrated approaches to address existing disparities. Strategies that account for economic, educational, and social factors are essential in mitigating the challenges faced by specific ethnic groups in accessing and understanding health information.

The Role of Language and Communication in Health Literacy

Language barriers significantly impact health literacy and access to health information among different ethnic groups. Studies indicate that individuals who do not speak the primary language used in the healthcare system struggle with understanding health instructions, diagnoses, and medical procedures (Hyatt et al., 2017). These language limitations hinder healthcare access and contribute to misunderstandings that can negatively affect patient health outcomes (Cyril et al., 2016). Immigrant communities with limited language proficiency often lack critical information on disease prevention, treatment, and health promotion, exacerbating disparities in health literacy (Nolan et al., 2021).

For example, a study by Hyun et al. highlights the difficulties faced by Korean immigrants in the United States in understanding health information due to language barriers, which have been

linked to low awareness of hepatitis B in this population (Hyun et al., 2021). Healthcare services that do not provide translators or multilingual health materials often result in patients missing essential health education and training opportunities (Cyril et al., 2016; Hyatt et al., 2017).

Effective strategies for improving health literacy among linguistically diverse populations involve adopting culturally and linguistically tailored communication approaches. These include clear and simplified oral communication methods, which are preferred by culturally diverse communities (Cyril et al., 2016). Furthermore, developing health education materials in multiple languages and ensuring healthcare providers receive cultural competency training are crucial steps in overcoming linguistic barriers (Jaschke & Kosyakova, 2021; Pavlovska et al., 2021).

Community-driven health education programs that integrate visual storytelling techniques and culturally relevant examples have shown success in enhancing comprehension among ethnic minorities (Gilhooley et al., 2019) A study by López et al. found that integrating bilingual telehealth interventions significantly improved health literacy among Hispanic populations (López et al., 2016). Engaging community members in developing and disseminating health information further strengthens trust and accessibility within marginalized populations (Jaschke & Kosyakova, 2021; Pavlovska et al., 2021).

By addressing language barriers through inclusive communication strategies, health literacy disparities can be significantly reduced, allowing for more equitable healthcare access across different ethnic groups.

The Influence of Cultural Beliefs and Traditions on Health Literacy

Cultural beliefs play a fundamental role in shaping individuals' perceptions of health and treatment. These beliefs influence how people understand illness, choose treatments, and interact with healthcare providers. In many communities, traditional healing practices are deeply embedded, leading to skepticism toward modern medical treatments. A strong preference for herbal remedies and traditional healing methods often results in the rejection of scientifically validated medical approaches.

López et al. found that within Latino communities, the belief that traditional medicine is safer and more natural often leads to a reluctance to adopt conventional medical treatments. When communities lack sufficient health literacy, this skepticism can widen the gap between available medical resources and their actual utilization (Park et al., 2017). Additionally, when healthcare providers fail to acknowledge cultural health beliefs, it can contribute to distrust in the healthcare system, leading to non-adherence to prescribed treatments (Badiu et al., 2017).

Integrating traditional health practices with modern medicine has proven to be an effective approach in bridging cultural gaps. Community health initiatives that respect cultural traditions while incorporating evidence-based medical information have demonstrated improved health outcomes in ethnic minority groups (Tong et al., 2016). For instance, among Hmong communities in the U.S., interventions combining traditional health perspectives with modern medical knowledge have led to higher rates of preventive healthcare utilization (Tong et al., 2016).

To improve health literacy, healthcare professionals should be trained to engage with patients in a culturally sensitive manner. This includes understanding cultural perspectives on health and using culturally adapted communication techniques to explain the benefits of evidence-based treatments while respecting traditional practices (Park et al., 2017).

Access and Use of Technology in Health Literacy

Technology plays an essential role in bridging health literacy gaps among ethnic minority groups. Digital health interventions, such as mobile health applications, provide wider accessibility to health information, particularly for communities with historically limited healthcare access. Technology-based health education tools offer an opportunity to deliver tailored health content in multiple languages and culturally appropriate formats, making information more accessible and engaging.

Applications that integrate cultural and linguistic considerations have shown significant improvements in health awareness and understanding among diverse populations (Tong et al., 2016). Research has demonstrated that digital interventions tailored to specific communities yield positive results in promoting preventive healthcare behaviors (Cyril et al., 2016). For example, mobile applications that provide health guidance in users' native languages have been effective in increasing comprehension and engagement in healthcare services (Rosenbaum et al., 2020).

Moreover, text messaging interventions such as the **Text4baby** program have successfully provided prenatal health information to underserved pregnant women, improving maternal health outcomes (Nuñez et al., 2017). However, digital health solutions must be designed with inclusivity in mind, ensuring that they remain accessible to individuals with varying levels of technological proficiency (Young et al., 2016). Collaboration between technology developers, healthcare providers, and community organizations is crucial in creating effective digital health literacy solutions that cater to the unique needs of ethnic minority populations.

By leveraging digital health tools, technology can serve as a powerful instrument in enhancing health literacy, ultimately reducing health disparities among ethnically diverse populations.

The findings of this study align with existing literature on ethnic disparities in health literacy while also providing new insights into the contributing factors to this gap. Park et al. (2017) emphasized that cultural competence in healthcare practice is essential for improving patient outcomes (Park et al., 2017). This study further supports the importance of culturally sensitive approaches that consider not only medical symptoms but also the broader cultural contexts in which individuals understand and manage their health (Park et al., 2017). The results highlight that ethnic disparities in health literacy can be addressed through interventions that are both linguistically and culturally tailored.

Bailey et al. (2021) identified the role of technology, particularly telehealth, in bridging gaps in access to health information (Bailey et al., 2021). The findings of this study suggest that technology-based interventions designed to meet the needs of diverse populations can enhance their comprehension of health-related matters. These results are consistent with previous research demonstrating that community-based and technological interventions are often more effective in educating specific ethnic groups. For example, Tong et al. (2016) found that community health

educators played a significant role in increasing colorectal cancer screening adoption among immigrant communities (Tong et al., 2016).

Moreover, Cyril et al. (2016) underscored the importance of clear communication and delivery methods that align with the preferences of the target population in improving health literacy (Cyril et al., 2016). The findings of this study reaffirm that many healthcare materials, when presented in written format, are often misunderstood by individuals from certain cultural backgrounds. The effectiveness of verbal communication and interactive approaches in disseminating health information is particularly critical for ethnically diverse populations.

Previous research has also shown that language barriers and cultural beliefs can hinder individuals' understanding of health and medical treatment, which is consistent with the findings of this study (Hyatt et al., 2017). For instance, Hyun et al. (2021) revealed that cultural stigma and immigrant status often pose significant barriers to accessing and comprehending health information (Hyun et al., 2021). The findings of this study further deepen the understanding that improving health literacy requires a comprehensive approach that not only ensures the delivery of accurate health information but also considers how cultural norms shape individuals' perceptions of health and medical care.

Overall, the consistency between the findings of this study and prior research underscores that while substantial work has been done on ethnic disparities in health literacy, additional factors such as cultural competence, technological interventions, and appropriate communication strategies must be explored further. This highlights the need for continued research to develop comprehensive strategies integrating these elements to effectively reduce health literacy disparities across diverse ethnic groups.

Structural and systemic factors play a significant role in the persistence of health literacy disparities. One of the most pressing issues is the socioeconomic divide that restricts access to health information. Previous studies have highlighted that ethnic minority groups often face challenges related to limited access to quality healthcare services, education, and resources that facilitate the understanding and utilization of health information (Danila et al., 2021). This makes individuals within these communities more susceptible to misinformation and less equipped to make informed health decisions.

Addressing this disparity requires a multifaceted approach, including enhanced training for healthcare providers in cultural competence and the integration of technology to facilitate health communication. Bailey et al. (2021) demonstrated that telehealth offers an opportunity for more inclusive and effective treatment for patients from diverse ethnic backgrounds (Bailey et al., 2021). However, for such technological solutions to succeed, their design must consider the specific needs of these populations. Engaging communities in the development of health education materials and programs can improve their relevance and effectiveness (Park et al., 2017).

The implications of these findings for public health policies and clinical practice are extensive. Policies must incorporate measures that acknowledge disparities in access and comprehension while ensuring that health information is delivered in culturally appropriate ways. Research that clearly identifies the challenges faced by patients from diverse cultural backgrounds can aid in

formulating more inclusive policies that enhance health literacy and healthcare access (Zelin et al., 2018).

Additionally, clinical practice should focus on improving communication between healthcare providers and patients. This involves accommodating patient communication needs, such as translating medical documents and offering multilingual health education materials. Memon et al. (2016) emphasized the importance of understanding factors that influence healthcare access, particularly among communities that are less likely to seek medical care (Memon et al., 2016).

Furthermore, efforts to promote health literacy in public health policies must include community-based approaches that leverage the participation of local stakeholders and healthcare advocates. Continuous discussions among various stakeholders in the health and education sectors are essential for strengthening trust in the healthcare system and increasing public awareness of available health resources (Khoong et al., 2020).

Despite the growing body of research on health literacy disparities, significant gaps remain that warrant further investigation. One critical gap is the lack of research exploring the intersection of cultural beliefs and health literacy interventions. While existing studies have examined health literacy within ethnic groups, few have systematically assessed how specific cultural values shape individuals' abilities to engage with health information (Park et al., 2017). Understanding these cultural nuances is crucial for developing targeted interventions that resonate with diverse populations.

Additionally, while some research has demonstrated the effectiveness of community-based health literacy programs, there is still a need for standardized frameworks to guide their implementation (Sancho & Larkin, 2020). Many interventions remain context-specific, limiting their scalability and generalizability to other populations. Future research should focus on identifying adaptable models that can be applied across different cultural and ethnic settings.

Language barriers also represent a persistent research gap. Despite widespread acknowledgment that limited English proficiency negatively impacts health literacy, relatively little research has been conducted on how to optimize healthcare communication for non-native speakers (Nolan et al., 2021). Further studies should explore the role of bilingual healthcare providers, translated health materials, and culturally adapted telehealth services in improving health literacy outcomes.

Another promising avenue for future research involves the role of digital health technologies in addressing health literacy disparities. While mobile applications and online health portals have shown potential in increasing health knowledge among underserved communities, concerns remain about their accessibility and usability for individuals with low digital literacy (Rosenbaum et al., 2020). Future studies should assess the effectiveness of digital health interventions in improving health literacy among diverse ethnic groups and identify best practices for ensuring equitable access.

In conclusion, while the findings of this study align with prior research on ethnic disparities in health literacy, they also emphasize the need for culturally competent interventions, improved communication strategies, and the integration of technology to bridge existing gaps. Addressing these disparities requires a multidisciplinary approach that combines policy changes, community

engagement, and innovative health education strategies. Further research is needed to refine these approaches and develop comprehensive, scalable solutions that effectively improve health literacy across diverse populations.

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In conclusion, while the findings of this study align with prior research on ethnic disparities in health literacy, they also emphasize the need for culturally competent interventions, improved communication strategies, and the integration of technology to bridge existing gaps. Addressing these disparities requires a multidisciplinary approach that combines policy changes, community engagement, and innovative health education strategies. Further research is needed to refine these approaches and develop comprehensive, scalable solutions that effectively improve health literacy across diverse populations.

CONCLUSION

This study highlights the significant impact of ethnicity on health literacy, demonstrating that socioeconomic factors, language barriers, cultural beliefs, and access to technology contribute to disparities in healthcare outcomes. The findings emphasize that lower health literacy among ethnic minority populations often leads to poor health decision-making, lower treatment adherence, and increased health risks. Systemic barriers, including inadequate culturally competent healthcare services, further exacerbate these disparities.

Given these findings, immediate interventions are needed to address health literacy gaps among diverse populations. Policies should prioritize cultural competence training for healthcare providers, the development of multilingual and culturally tailored health communication strategies, and the integration of community-based health education programs. Additionally, the implementation of digital health tools, specifically designed to accommodate linguistic and cultural diversity, can play a pivotal role in bridging the gap in health literacy.

Future research should focus on evaluating the long-term effectiveness of culturally tailored health literacy interventions, exploring scalable models of community engagement, and assessing the role of digital health technologies in improving health literacy across diverse ethnic groups. By adopting a multidimensional approach that incorporates education, policy reforms, and technological advancements, health systems can create more equitable healthcare environments that empower individuals from all ethnic backgrounds to make informed health decisions.

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