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Socioeconomic and Cultural Determinants of Access to Musculoskeletal Healthcare Among Indigenous Populations Worldwide: A Systematic Review

Background: Indigenous populations globally face challenges in medical care. The socioeconomic and cultural determinants that this demographic faces include systemic discrimination, geographic isolation, and poverty, amplifying disparities in healthcare access and outcomes, contributing to cycles of disability and a diminished quality of life for patients. This review examines the socioeconomic and cultural barriers to musculoskeletal healthcare among Indigenous populations, evaluates the common disparities in musculoskeletal healthcare outcomes, and identifies actionable strategies to address these inequities.

Methods: A systematic search using PubMed was conducted using predefined terms related to Indigenous populations, musculoskeletal healthcare, and socioeconomic factors. The inclusion criteria focused on studies from the previous 20 years involving Indigenous adults undergoing or seeking orthopedic treatment. Data extraction and quality assessment followed PRISMA guidelines to explore disparities in healthcare access and outcomes.

Results: Of the 148 articles, 15 articles met the inclusion criteria. Key findings highlighted the systemic barriers for Indigenous populations such as geographic isolation, economic challenges, and a lack of cultural understanding between healthcare providers and Indigenous patients. Disparities in postoperative outcomes, recovery rates, and complication rates were evident. Gaps in culturally competent care and healthcare infrastructure were identified, with more common trends in rural and remote areas.

Conclusions: Indigenous populations face continuing healthcare inequities, driven by their socioeconomic and cultural barriers. Addressing these disparities requires systemic reforms, beginning with educational systems and expanding to culturally inclusive care models, with targeted policies to improve access to musculoskeletal care. Future research should prioritize longitudinal studies and equity-focused methodologies to develop sustained solutions for improving healthcare outcomes among Indigenous communities in the United States and other areas of the world. Enhancing cultural competency within healthcare services is recommended to ensure these challenges are addressed.

Keywords: Indigenous populations, healthcare disparities, musculoskeletal health, orthopedic care access, socioeconomic factors, cultural competence

Introduction

In the United States and around the world, Indigenous peoples comprise about 6.2% of the population (Birika, n.d.). Throughout history, Indigenous settlements have endured trauma including colonization, assimilation, and displacement. Their human rights have been and continue to be compromised by state authorities in some areas, and they tend to face marginalization and discrimination. In healthcare, the major issues experienced by Native Americans include poor health, low-quality medical care, suicide, drug and alcohol use disorders, depression, and sexual violence (Amnesty International, 2024; Findling, 2019).

For Indigenous populations, neighborhood conditions, geographic location, and residential segregation have affected their health, social mobility, and quality of life. Prior research has been conducted to analyze the experiences of Native Americans in healthcare. Reports made by Native Americans show that they experience pervasive discrimination during healthcare visits; racial discrimination; lack of accessible; afford-able; and culturally appropriate care; and have higher rates of reporting institutional discrimination overall (Newman & Velez, 2014). Trends such as an increase in the size of Native American populations caused White populations to become more biased against them (Newman & Velez, 2014). Overall, these factors contribute to Indigenous populations reporting such discrimination.

Globally, healthcare access issues faced by Indigenous populations share common socioeconomic and cultural barriers. Studies have highlighted how factors such as limited healthcare awareness, geographic isolation, and cultural differences contribute to significant delays in care as well as a lack of competent treatment.

Socioeconomic challenges, such as homelessness, low education, and unemployment, further amplify these barriers, inevitably limiting access to necessary care for conditions like arthritis and chronic pain. Geographic disparities, particularly in rural and remote areas, contribute to Indigenous populations having less access to specialists and culturally competent care (Nguyen et al., 2020).

Musculoskeletal care is a critical area of investigation because these conditions are among the leading causes of disability worldwide. Easy and adequate access to effective orthopedic treatment can prevent long-term disabilities, reduce chronic pain, and improve overall quality of life. Disparities in postoperative outcomes, recovery rates, and complication rates remain poorly studied. Federal policies and agencies have not been successful in addressing the needs of Indigenous populations. This study reviews the barriers Indigenous populations face in accessing musculoskeletal care.

Methodology

PubMed was used as the database to complete the preliminary literature search. Afterwards, studies were selected in a two-step process (Figure 1): first, titles and abstracts were independently screened by two reviewers against the inclusion criteria, which included focusing on Indigenous populations and reporting data related to musculoskeletal healthcare access, utilization, or outcomes. Full-text reviews of selected studies were performed to confirm eligibility.

Database Search Strategies

Studies were included if they met the following criteria: the main study population consisted of Indigenous peoples, such as Native Americans, First Nations, Aboriginal Australians, Māori, Inuit, or other Indigenous groups; the subject group underwent or sought an orthopedic procedure related to musculoskeletal healthcare; only human subjects were evaluated; participants were aged 18 years or older; and the study was published within the last 20 years (2004–2024).

The final search of PubMed was conducted on November 12, 2024. The search strategy employed the following terms listed in Table 1. No filters or language restrictions were applied to the search. The strategy ensured the comprehensive identification of relevant studies addressing socioeconomical and cultural factors in orthopedic healthcare access among Indigenous populations.

Articles meeting the inclusion criteria were categorized based on key elements (Table 2), such as the Indigenous population studied, the type of musculoskeletal condition or orthopedic procedure discussed, and the socioeconomic and cultural factors impacting healthcare access. This organization facilitated the identification of recurring themes and patterns relevant to understanding healthcare disparities in orthopedic services among Indigenous populations.

Selection Process

The search yielded 148 articles, which were screened independently by two reviewers. Titles and abstracts were reviewed to assess alignment with the inclusion criteria, followed by a full-text review of eligible studies. Those studies that focused only on pediatric populations had less than 30 in their sample size, or did not have clinical applications, were excluded. Disagreements between reviewers were resolved with discussion and consensus.

Figure 1

Flowchart of the systematic research in PubMed

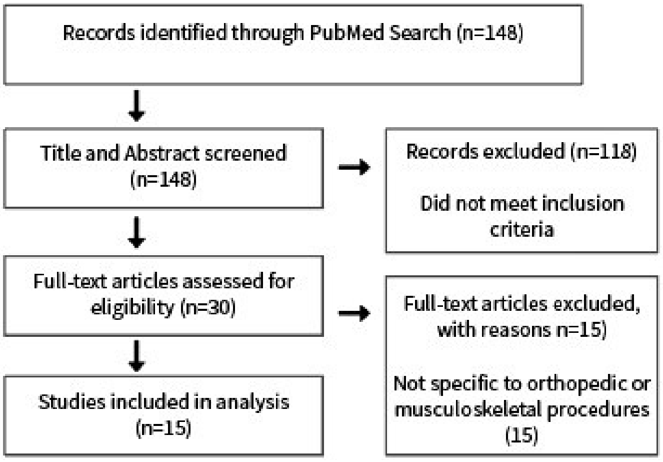


Table 1

Keywords used in the PubMed search

Category: Keywords
Indigenous Groups: Indigenous, Native American, First Nations, Aboriginal, Maori, Inuit, Indigenous People
Social Factors: socioeconomic factors, social determinants, economic status, poverty, health disparities, access to care
Orthopedic Terms: orthopedic surgery, joint replacement, knee arthroplasty, hip arthoplasty, postoperative outcomes, surgical outcomes

Selection Result

Studies included in this review focused on healthcare disparities and access issues among Indigenous populations. These studies were cross-sectional analyses, observational cohort studies, and mixed-method designs. Inclusion criteria emphasized the following populations: Māori, Pasifika, Aboriginal Australians, and Indigenous groups in Canada and Latin America. The selection process highlighted geographic and systemic inequities in healthcare access, often targeting underserved or marginalized groups. 15 studies were selected for this analysis, and the results are summarized in Table 2. During the categorization of articles, parameters were included to distinguish the analyzed articles and whether they were applicable or not. The chosen studies focus on a wide range of health-care themes, including the prevalence of musculoskeletal conditions, barriers to care, culturally tailored interventions, and disparities in access to specialist services.

Risk of Bias in Studies and Certainty of Evidence

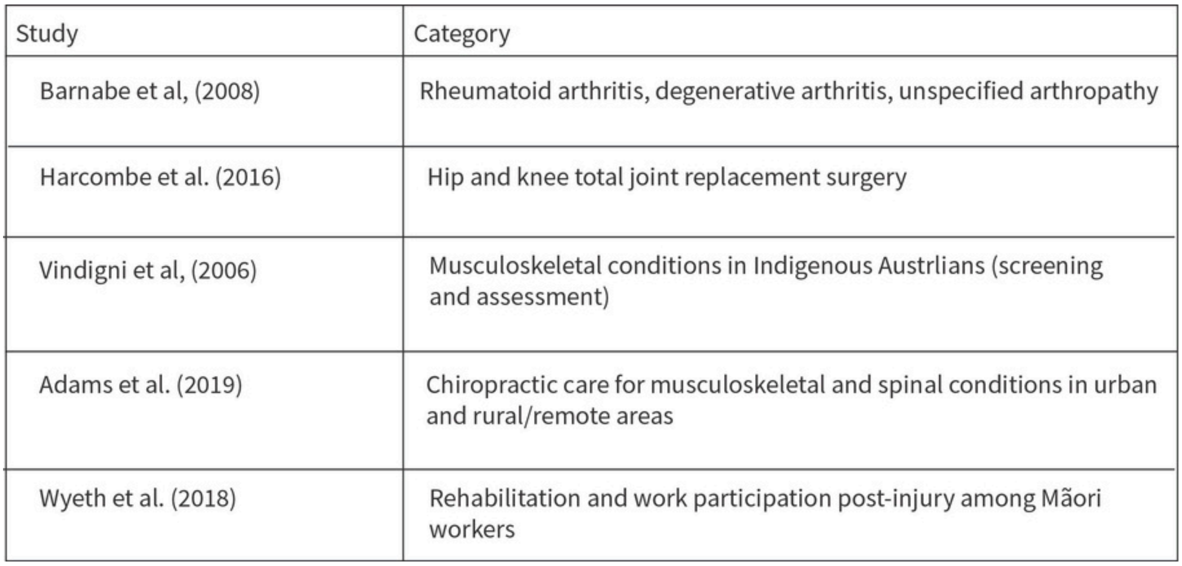
The search strategy used in this review ensured a credible methodology that contributed to the reliability of the findings. However, several limitations justify consideration. The reliance on a single database, PubMed, may have excluded relevant studies that are available in other databases. By restricting the search to musculoskeletal treatment, the specificity of this review was significantly increased, but the results were particularly limited. There was a lack of studies from the United States and other countries with a notable Indigenous population.

Selection bias was inherent due to the select population targets included, which limited the generalizability of this study. Attrition bias was noted, given that most studies did not have longitudinal follow-ups. Reporting bias may be present due to underreporting, such as a lack of data on comorbidities or specific impacts of culture. The wide range of musculoskeletal diseases and procedures included in the studies posed challenges, making direct comparisons and comprehensive analyses difficult. There were limited details in the reporting of some outcomes, with many studies failing to provide detailed statistical measures that could enhance the precision of findings.

The certainty of the evidence varied greatly among the studies, some providing strong data on systemic inequities, while others were either small in sample size or methodologically limited. Numerous studies relied upon self-reported data. Nonetheless, consistent identification of barriers and disparities across multiple studies reinforced the validity of overarching themes.

Table 2

Summary of The Included Studies



Study	Category
Barnabe et al, (2008)	Rheumatoid arthritis, degenerative arthritis, unspecified arthropathy
Harcombe et al. (2016)	Hip and knee total joint replacement surgery
Vindigni et al, (2006)	Musculoskeletal conditions in Indigenous Austrlians (screening and assessment)
Adams et al. (2019)	Chiropractic care for musculoskeletal and spinal conditions in urban and rural/remote areas
Wyeth et al. (2018)	Rehabilitation and work participation post-injury among Mãori workers

Case Studies

Significant disparities in musculoskeletal health and access to care were noted for vulnerable Indigenous populations, which emphasized large systemic barriers and inequities. For example, Aboriginal Manitobans in Canada have a significantly higher rate of rheumatoid arthritis, degenerative arthritis, and unspecified arthropathy (Barnabe et al., 2008). These disparities reflected system-wide inequities in access to musculoskeletal care among these communities and pointed out the need for targeted programs to narrow these gaps.

Total Joint Replacement Surgeries in New Zealand

Geographic disparities are evident in access to publicly funded total joint replacement (TJR) surgeries in New Zealand. Despite the increase in procedure volume and rates of publicly funded TJR surgeries, availability has not kept pace with the growing population's demand. This situation disproportionately affects underserved communities and necessitates systemic reforms to improve equity in orthopedic care, and an increase in barriers to adequate patient care, such as prolonged clinic visits and economic burdens, has been identified (Harcombe et al., 2016).

Challenges and Adaptation of Healthcare in Australia

Indigenous Australians who live in rural communities experience high levels of musculoskeletal conditions that negatively impact their day-to-day tasks (Vindigni et al., 2006). This exemplified the difficulties that the Indigenous populations in Australia faced.

The role of chiropractors in managing musculoskeletal conditions was also explored in rural and remote Australia. However, it was noted that this population of doctors faced unique challenges, such as high workloads and limited diagnostic tools, highlighting the structural barriers within rural healthcare systems. Rural and remote-based chiropractors are more likely to treat a variety of musculoskeletal cases, which include Indigenous populations, in comparison to their urban colleagues (Adams et al., 2019).

The cultural adaptation of diagnostic tools is one of the most important strategies in enhancing musculoskeletal health assessments. A screening tool specially adapted for one Indigenous Australian population has demonstrated improved diagnostic accuracy and emphasized the need for culturally sensitive approaches in reducing health inequalities in rural settings (Vindigni et al, 2006).

Cultural and Socioeconomic Barriers to Healthcare in New Zealand and Latin America

Cultural and linguistic barriers hindered access to health care for certain musculoskeletal conditions, including carpal tunnel syndrome (CTS), especially among the Māori and Pacific populations in New Zealand. Culturally appropriate healthcare systems were needed to remove disparities in disease outcomes. Policy changes that reduced the individual burden of proof in injury compensation claims processes, enabled time off work to attend health appointments, and increased public funding for surgical resources were recommended to improve early access to CTS care, particularly for Māori and Pacific populations and those in small and rural workplaces, which would ultimately benefit this Indigenous population (Bűhler et al., 2024). A syndemic model of musculoskeletal health among Indigenous people in Latin America drew on interrelations between socioeconomic factors such as geographic isolation, poor educational attainment, and inadequate health resources. There was a higher association for health inequ-ities in patients with rheumatic and musculo-skeletal diseases (RMD) in Indigenous populations (Peláez-Ballestas et al., 2018). These findings suggest the need for interventions that take into consideration the complex impact of inequity on musculoskeletal health disparities.

Understudied Disparities of Healthcare Outcome in Australia

High rates of rheumatoid arthritis, osteoarthritis, and systemic lupus erythematosus among the Aboriginal and Torres Strait Islander communities in Australia called for targeted strategies that seek to improve access and health outcomes in musculoskeletal health for Indigenous and tribal populations (Sines et al., 2024). It was concluded that further studies with local Indigenous populations were necessary to determine the burden of musculoskeletal diseases.

Within the realm of surgical procedures, the studies we examined found that Indigenous populations have significantly higher rates of 30- and 90-day post-operative mortality compared to Europeans, particularly for elective procedures, which include musculoskeletal procedures. In addition, systemic disparities in surgical practice, including joint replacement surgeries for Aboriginal and Torres Strait Islander peoples, were documented (O'Brien et al., 2021). The findings have underlined the need for targeted reform efforts toward overcoming remaining barriers to surgical access and improvement in health outcomes overall for the Indigenous population.

Common Problems Across The Globe

The review identified healthcare disparities among Indigenous populations in terms of musculoskeletal care globally. Various barriers included geographic isolation, socioeconomic challenges, cultural mismatches, and inadequate patient care. Systemic racism, poverty, and lack of culturally competent care were identified across studies as the most contributing factors to disparities (Barnabe et al., 2008; Bűhler et al., 2024; Peláez-Ballestas et al., 2018). Geographic and rural limitations com-pounded access to necessary services like ortho-pedic surgical treatment (Harcombe et al., 2016; O'Brien et al., 2021). These shared challenges between Indigenous populations emphasize the importance of learning from international con-texts to understand and address disparities (Gran-ados et al., 2023; Peláez-Ballestas et al., 2018).

The major socioeconomic determinants that were noticeably consistent included income, employment status, and educational attainment, and they were frequently identified as critical barriers to healthcare access for this population (Granados et al., 2023; Peláez-Ballestas et al., 2018). Indigenous populations often reside in rural areas, further compounding these challenges through their geographic isolation and limited availability of specialist care (Adams et al., 2019; Vindigni et al., 2006). Studies consistently reported delays in receiving timely orthopedic treatment, essentially exacerbating conditions like arthritis and fractures, ultimately leading to long-term disabilities (Barnabe et al., 2008; Sines et al., 2024).

Cultural factors played a significant role in this healthcare problem, as Indigenous patients reported distrust in healthcare systems due to historical and ongoing systemic discrimination (Bűhler et al., 2024; Peláez-Ballestas et al., 2018). Similarly, claims of healthcare providers' lack of understanding of Indigenous values and traditions further discouraged Indigenous people from seeking care (Bűhler et al., 2024; Vindigni et al., 2006). This lack of culturally competent care highlights a pressing need for healthcare systems to integrate Indigenous perspectives and practices into services, even as early as the medical education system (Vindigni et al., 2006).

Disparities beyond access to care extended to post-operative outcomes, including poorer recove- ry rates and higher complication rates among Indi-genous patients (Gurney et al., 2021; O'Brien et al., 2021). These findings, supported by the studies, point to a systemic issue that requires multi-level interventions, for instance, improving healthcare infrastructure and policy reforms in rural areas and targeted training for healthcare providers to deliver culturally sensitive care (Adams et al., 2019; Bűhler et al., 2024; O'Brien et al., 2021).

Conclusion

This review highlights the disparities in access to musculoskeletal healthcare services among Indigenous populations, driven by socioeconomic and cultural barriers, systemic racism, and geographic isolation. These inequities result in delayed care, higher complication rates, and poorer outcomes, which perpetuate cycles of disability and reduced quality of life. Inadequate culturally competent care was consistently identified as a critical barrier. The findings emphasize the need for targeted interventions to improve healthcare equity for Indigenous populations. Healthcare providers, researchers, and policymakers must collaborate to develop culturally competent care models, enhance healthcare infrastructure in underserved areas, and implement systemic reforms to address these inequities. Integrating Indigenous perspectives into healthcare education and training can build trust and improve provider-patient relationships while expanding access to specialist care in remote areas can mitigate geographic barriers. Longitudinal studies with larger and more diverse samples are needed to capture the full scope of disparities in musculoskeletal healthcare, especially in the United States. Future research must deepen our understanding of healthcare disparities and implement methodologies to achieve health equity for Indigenous populations. Enhancing cultural competency within healthcare services will aid in the development of patient-centered medical care.

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