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Disparities in Kidney Disease: The Need for Targeted Programs and Interventions to Promote Health Equity across the Globe

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Abstract

Kidney disease is a major public health issue that affects over 850 million people globally. The burden of kidney disease varies greatly around the world, as do its identification and treatment. The causes of these disparities are multifactorial, including socioeconomic status, race and ethnicity, sex/gender, age, geographic location, language and cultural barriers, healthcare system and provider factors, and social determinants of health, among others. In this paper, poor health outcomes associated with disparities in kidney disease, strategies to mitigate these disparities, and the importance of diversity, equity, and inclusion (DEI) in kidney disease are highlighted, while targeted programs, and interventions rooted in DEI tenets are recommended.

Keywords: Disparities, Diversity, Equity, Inclusion, Kidney disease

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Introduction

Kidney disease is a major public health issue that affects over 850 million people globally.[1] The burden of kidney disease markedly differs over the world, as do its detection and management. Disparities in kidney disease were first noted in the medical literature in the 1980s.[2] Disparities in kidney disease refer to the unequal burden of kidney disease affecting various populations, particularly minority and disadvantaged groups. In many situations, rates of kidney disease and the provision of care are characterized by socioeconomic, cultural, and political factors, resulting in large variations in disease burden, even in affluent countries.[3] These disparities exist across the kidney disease spectrum, from preventive efforts to reduce the development of kidney disease, to screening for kidney disease among high-risk individuals, to access to subspecialty care, and management of kidney failure with renal replacement therapies (RRTs). Also, these disparities result in higher incidence and prevalence of kidney disease, worse outcomes and survival rates, and limited access to healthcare and RRTs (dialysis and transplantation), delays in diagnosis and treatment, and inadequate management of comorbid conditions (e.g., diabetes and hypertension) in low- and middle-income countries (LMICs), and among minority and disadvantaged groups. Disparities in kidney disease are driven by a complex interplay of factors.

Causes of Disparities in Kidney Disease

The causes of disparities in kidney disease are multifactorial and include:

1. Race and Ethnicity: Worldwide, discrimination because of race and ethnicity is inextricably related to adverse health outcomes. Racism can confer inequalities in opportunities, income, access to health care, employment, education, health insurance, food security, and community-level resources. Another area where race impacts

kidney care is the misclassification of the estimated glomerular filtration rate (eGFR) due to the race coefficient. It has been noted that the inclusion of race in the eGFR equation indirectly deprives African Americans of timely nephrology care, especially at advanced stages.[4] Also, National Kidney Foundation has reported some disparities in kidney disease.[5] Americans are less likely to receive a transplant evaluation, have less access to transplant waiting list, are less likely to survive on the waiting list and have lower rates of graft survival post-transplant. Non-Hispanic Black or African-American people experience a more rapid decline of kidney function than non-Hispanic Whites. Black or African Americans are more than four times as likely as white people to develop kidney failure. Black or African Americans are also associated with increased risk for acute kidney injury. Compared to non-Hispanic people, Hispanic or Latino people are about 1.3 times more likely to receive a diagnosis of kidney failure. Native Hawaiians, Pacific Islanders, American Indians and Alaska Natives also have a higher prevalence of kidney disease than whites. In spite of renal replacement therapy being covered by Medicare for the majority of patients in the US, undocumented immigrants are not covered at all.[6] Genetically, certain variants increase the risk of kidney disease in Africans, African Americans, Hispanics/Latinos, and Asians.[7,8,9]

2. Sex/Gender: Sex/gender discrimination in society can help drive inequalities in healthcare, such as unequal health opportunities, differential health-seeking behaviors, vulnerabilities to diseases, and biases in medical research. The sex/gender-specific disparities is because females are less frequently employed, have other social responsibilities, and often give low priority to their health. Evidence has shown that females are also disadvantaged as far as transplantation is concerned. It is documented that the majority of living kidney donors are females, yet they are less likely to receive a kidney transplant.[10]

3. Diabetes and Hypertension: Higher prevalence of these conditions in minority populations contributes to kidney disease disparities.

4. Obesity and Metabolic Syndrome: These conditions increase kidney disease risk and are more common in minority populations.

5. Geographic and Environmental Factors: Evidence has shown a disproportionate number of people with kidney disease in the world are from developing countries and LMICs.[11] Low income, limited education, and lack of or limited access to care and health insurance causes roadblocks in detecting and treating risk factors for kidney disease, such as diabetes and hypertension. Unlike in high-income countries (HICs), where prevalence rates are relatively homogeneous, rates are rather heterogeneous in LMICs, varying as widely as between 5.5% in Bolivia and 29.9% in China.[12] Other reported disparities are a higher coverage of kidney disease detection programs in HICs than in LMICs (32% vs 24%), a higher access to medications and RRTs in HICs than LMICs, a lower shortage of nephrologists in HICs than in LMICs (51% vs 90%), a better adherence to kidney care guidelines, a higher coverage of information system and research, and a higher investment in kidney health in HICs than LMICs.[13-16] Disparities have been noted in the availability of academic centers for renal clinical trial management (low-income countries (18%), lower middle-income countries (34%), upper middle-income countries (62%), and 63% in HICs.[17] Frequent idiopathic kidney disease has been reported among rural agrarian communities in Sri Lanka,[18] India,[19] and Central America.[20,21] The renal disadvantage of indigenes of LMICs occurs early in foetal life, as maternal protein malnutrition is linked with reduced fetal nephron numbers and subsequent increased risk of kidney disease.[22] Furthermore, exposure to several environmental toxins, heavy metals, and other harmful substances contributing to kidney disease, particularly in rural and underserved areas also exacerbate kidney disease disparities. Another culprit of kidney disease in LMICs is exposures to herbal medicines causing chronic interstitial nephritis.[23] Also, fake and counterfeit medicines with high prevalence (10% – 60%) in LMICs [24,25] may be a significant contributor to kidney disease, though not well quantified.

6. Lack of Access to Healthcare: This is due to the limited availability of healthcare services, particularly in rural and underserved areas.

7. Language Barriers and Limited Health Literacy: Difficulty in understanding kidney healthcare information and navigating the healthcare system can lead to misunderstandings about kidney disease, which in turn leads to poor health outcomes.
8. Age and Disability Discrimination: Older adults and individuals with disabilities may face barriers to care.
9. Cultural and Religious Beliefs: Different beliefs and practices can influence healthcare decisions and adherence. For example, some cultures may consume high-sodium or high-sugar foods, increasing kidney disease risk, while some religions believe that kidney disease is a curse or punishment from God/gods. Also, some cultures think that traditional remedies are more effective than Western medicines. Religious beliefs of some Orthodox Jewish or Muslim communities may prohibit kidney donation, while some cultural beliefs may view kidney donation as disrespectful to the body. Cultural beliefs may prioritize family and community over individual healthcare needs, whereas religious beliefs may discourage seeking medical care, trusting in divine intervention instead. Other beliefs and practices causing disparities are language differences between patients and healthcare providers, and cultural nuances affecting communication styles and trust. Traditional remedies or herbal supplements interacting with medications or worsening kidney disease, and cultural beliefs promoting inadequate fluid intake or excessive alcohol consumption. Cultural beliefs affecting education and employment opportunities, leading to reduced access to healthcare, and religious beliefs influencing social support network and healthcare navigation. Historical medical experimentation or mistreatment leading to mistrust of healthcare systems, and beliefs perpetuating conspiracy theories or mistrust of Western medicines. Cultural beliefs affecting understanding of health and disease, and limited health literacy due to language or educational barriers. Cultural beliefs affecting family dynamics and caregiving roles, and religious beliefs influencing end-of-life care and decision-making.
10. Healthcare Provider Biases and Disparities in Care: Limited knowledge, biases, and inadequate training leading to unequal treatment and management of kidney disease can contribute to disparities
11. Health System and Policy Factors: Inadequate policies, funding, and resource allocation exacerbate disparities.
12. Lack of Representation in Clinical Trials: Limited generalizability of research findings to diverse populations. In the US, evidence has shown that Black, Hispanic, Native American, and Asian American people have a greater chance of having kidney failure compared to white people. About 33% of people with kidney failure are Black, and Hispanic/Latino American people are about 1.5 times more likely to have kidney failure compared to non-Hispanics.[5] Unfortunately, only about 10% clinical trial participants are Black, and only about 10% clinical trial participants are Hispanic.[26]
13. Social Determinants of Health: Poor housing, lack of healthy food, transportation barriers, low income, limited education, and employment insecurity affect health outcomes of various diseases, including kidney disease.

Poor Health Outcomes Associated with Disparities in Kidney Disease

Disparities in kidney disease can lead to various poor health outcomes, including:
1. Higher Mortality Rates: Racial and ethnic minorities experience higher mortality rates due to kidney disease. Also, 90% of disadvantaged populations have no access RRTs, contributing to higher mortality.[27]
2. Increased Risk of Kidney Failure: Disparities in access to care and management of chronic conditions lead to a higher risk of kidney failure.
3. Poorer Blood Pressure and Sugar Control: Inadequate management of hypertension, and diabetes contribute to kidney disease progression.
4. Higher Rates of Cardiovascular Disease: Patients with kidney disease from disadvantaged groups face a higher risk of cardiovascular disease.

5. Increased Risk of Anemia: Disparities in access to care can result in inadequate management of anemia in patients with kidney disease.
6. Reduced Access to Kidney Transplantation: Racial and ethnic minorities face barriers in accessing kidney transplantation.
7. Longer Waiting Times for Transplantation: Disparities lead to prolonged waiting times for kidney transplantation.
8. Lower Rates of Dialysis Initiation: Disparities lead to delayed or inadequate initiation of dialysis, which contributes to poor health outcomes.
9. Poorer Management of Comorbid Conditions: Inadequate management of chronic conditions like diabetes and hypertension worsens kidney disease outcomes.
10. Increased Risk of Hospitalizations: Disparities lead to higher hospitalization rates for patients with kidney disease.
11. Longer Hospital Stays: Disparities result in extended hospital stays, increasing healthcare costs and patient burden.
12. Higher Rates of Readmission: Inadequate post-discharge care leads to higher readmission rates.
13. Reduced Quality of Life: Disparities in kidney disease care negatively impact patients' quality of life.
14. Increased Risk of Cognitive Impairment: Patients with kidney disease from disadvantaged groups face a higher risk of cognitive decline.
15. Higher Rates of Depression and Anxiety: Disparities in kidney disease care contribute to higher rates of mental health issues.

From the foregoing, it is worth noting that addressing disparities and improving access to quality care is crucial to reducing poor health outcomes and promoting health equity in kidney disease management. This can be achieved through the application of DEI principles in all facets of kidney disease education, training, and care.

Strategies to Mitigate Disparities in Kidney Disease

Strategies required to address the causes of disparities in kidney disease include:

1. Cultural Competence: Healthcare providers should be aware of the cultural beliefs, values, and practices of diverse patient populations and adapt care accordingly.
2. Language Access: Efforts should be made to ensure that patients with kidney disease and also with language barrier have access to interpreters and translated materials.
3. Health Literacy: Materials in clear and simple language should be used to help patients with kidney disease understand their condition and treatment. Audiovisual materials may be beneficial for low-literates.
4. Equitable Access to Care: Barriers to care, such as lack of insurance, transportation, or financial resources, need to be addressed. Equitable access to quality, affordable, safe, effective, and essential medications, health services, and health products or technologies that meet people’ s priority health care needs without exposing them to financial hardship in paying for them is a key platform of the worldwide push for universal health coverage and the WHO Sustainable Development Goal-3 (Health).
5. Racial and Ethnic Equality: Disparities in diagnosis, treatment, and outcomes for diverse patient populations should be recognized and addressed. The recent movement around the globe advocating for racial equality and end to systemic racism has crystallized the urgent need for institutions to embrace and value all people.
6. Gender and Sexual Minority Inclusivity: Inclusive care should be provided to Lesbians, Gays, Bisexuals, Transgenders, Queers or Questioning, and others (LGBTQ+) with kidney disease, including using preferred names and pronouns.
7. Disability Access: Physical accessibility and accommodation for patients with disabilities should be ensured.

8. Patient-Centered Care: Patients should be involved in shared decision-making and their values and preferences prioritized.
9. Provider Diversity: A diverse healthcare workforce to better reflect the patient population should be fostered. Sadly, evidence has shown that 49% of the nephrology workforce in the US is made up of international medical graduates.[28] Most of these international medical graduates face unnecessary restrictions on where and how they can practice. Kidney care needs experts from across the globe, and from a variety of disciplines, to transform the future of kidney care through more culturally competent care.
10. Diverse Participation in Kidney Disease Research: Diverse populations' participation in kidney disease clinical trials and research studies should be encouraged.
11. Addressing Systemic and Structural Barriers: Barriers such as lack of access to healthy food, transportation, and housing should be addressed.
12. Continuous Education and Quality Improvement: DEI gaps in care should be regularly assessed and addressed through ongoing education and quality improvement initiatives.
On the contrary, failure to address the causes of disparities through various strategies listed above can lead to poor health outcomes for patients with kidney disease.

Importance of Diversity, Equity, and Inclusion in Kidney Disease

Diversity, equity, and inclusion in kidney disease care are crucial for addressing disparities and ensuring equal access to quality care for all patients, regardless of race, ethnicity, sex/gender, or socioeconomic status. The importance of DEI in kidney disease includes the following:
1. Addressing Disparities: DEI helps reduce kidney disease disparities among marginalized communities, ensuring equitable access to care.
2. Improved Kidney Health Outcomes: Culturally competent kidney care and inclusive environments can lead to better kidney health outcomes and patient satisfaction with the kidney care provided.
3. Increased Access to Transplantation: Inclusive practices can increase organ donation and transplantation rates among underrepresented groups.
4. Enhanced Patient Engagement: DEI fosters trust and understanding, leading to better patient engagement and self-management.
5.Innovative Research and Solutions: Diverse perspectives and inclusive research environments drive innovative solutions for kidney disease.
6. Culturally Sensitive Kidney Care: DEI ensures kidney care that respects patients' cultural beliefs, values, and practices.
7. Reducing Bias and Discrimination: DEI addresses implicit bias and discrimination in healthcare, ensuring equitable care for all.
8. Promoting Health Equity: DEI addresses social determinants of health, reduces health inequities and promoting kidney health.
9. Empowering Underrepresented Communities: DEI empowers patients and families from diverse backgrounds to take control of their health.
10. Enhancing Kidney Care Workforce Diversity: DEI promotes a diverse kidney care workforce, better reflecting the patient population
It is evident that by prioritizing DEI in kidney disease care, existing disparities can be addressed to improve health outcomes, and promote inclusive and equitable care for all individuals.

Targeted Programs, and Interventions Capable of Promoting Health Equity in Kidney Disease

Programs, and interventions that can help reduce disparities in kidney disease by increasing access to care, promoting cultural competence, and addressing social determinants of health include:

1. Laws: Laws such as the Affordable Care Act, Cultural Competence and Language Access laws, Immigration and Refugee Healthcare Access laws, and Dialysis and Transplantation Access laws are critical to addressing disparities in kidney disease. Also, laws that guarantee universal health care, advance racial and sex/gender equality, discourage malpractice, and promote timely referrals for specialty care, and provide stringent regulations in the field of dialysis and kidney transplantation are needed to ensure availability, affordability, and equal accessibility of essential kidney care, including kidney replacement therapies.
2. Medicare and Medicaid Expansion: Increase access to healthcare for low-income and marginalized populations can help address healthcare disparities.
3. Kidney Disease Education and Awareness Programs: Development, funding, and provision of kidney disease education and awareness programs and interventions is an important strategy to reduce disparities.
4. Regional and National Kidney Disease Strategies: Every region and country should develop a comprehensive plan to address kidney disease disparities.
5. Health Disparities Research Funding: Research on kidney disease disparities and interventions should receive adequate support through funding. Funding spurs research, discovery, and innovation and improves global health.[29]
6. Community Health Workers Programs: Community members should be trained to provide culturally sensitive healthcare support to individuals with kidney disease.
7. Telehealth and Remote Monitoring Access: Expanding access to care for rural and underserved populations through information communication and technology can help reduce or eliminate disparities in kidney disease.
8. Kidney Disease Screening, Early Detection and Treatment Programs: These programs will help identify and treat kidney disease earlier in high-risk populations.
9. Removal of Race from a Major Clinical Algorithm. Excluding race from eGFR calculations is necessary to address the effect of structural racism on patients with kidney disease and improve clinical care and outcomes.
10. Kidney Care Workforce Diversity Initiatives: Initiatives that aim at increasing diversity among kidney care providers are crucial to better serve diverse patient populations with kidney disease.
11. Community-Based Initiatives and Partnerships: Collaboration between patients, families, clinicians, and community health workers to promote kidney health and disease prevention is essential to eliminate disparities in kidney disease and their outcomes.

Conclusion

Disparities in kidney disease can negatively impact kidney health. Therefore, understanding and addressing the causes of these disparities through programs, policies and laws rooted in DEI tenets is crucial for reducing health inequities and improving kidney disease outcomes for all populations, regardless of race, ethnicity, sex/gender, or socioeconomic status.

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