



Epidemiology of Diabetes, Hypertension, and Cancer in Underserved Areas: An Evidence-Based Review

Abdulghani Noor Faleh Al-Asadi¹, Majdi Noor Faleh Al-Asadi², Musfer Mohammed Obaid Al-Ghamdi³, Majed Ali Mufrih Alghalibi⁴, Zahraa Yahya Ahmed Al-Hatimi⁵, Jamelah Khamis Radid Al-Yazidi⁶, Awatif Abdullah Alghamdi⁷, Mousa Ahmed Abdullah Alshamrani⁸, Hani Mohammed Awadh Alzahrani⁹ and Jamal Saad Abdullah Asiri¹⁰

¹ Corresponding Author, Public Health Specialist, Health Control Center Management at King Abdulaziz International Airport, Jeddah

^{2, 5, 6, 7, 8, 9} Public Health Specialist, Health Control Center Management at King Abdulaziz International Airport, Jeddah

^{3, 4} Epidemiology Technician, Health Surveillance Center Management, King Abdulaziz, International Airport, Jeddah

¹⁰ Epidemiology Specialist - Public Health, Hospitals - Prince Faisal Bin Khalid center - Abha

Abstract

Underserved areas in the United States bear a substantial burden of chronic diseases, including diabetes, hypertension, and cancer. These diseases severely impair quality of life and account for a large share of excess morbidity and mortality across the nation. Despite constituting a major public health problem, they have been neglected in scientific research and in interventions tailored to address these disparities. To inform effective interventions, this synthesis describes the epidemiology and determinants of diabetes, hypertension, and cancer, and the implications for public health strategies aimed at improving access to prevention and care in these areas. An integrated conceptual framework was developed based on the World Health Organization's social determinants of health. Focusing on evidence from the United States, key knowledge gaps were identified through a deductive approach and by synthesizing recent reviews of the epidemiology of these diseases in low-resource settings and their social and structural determinants. After mapping knowledge gaps across the three conditions, a targeted literature search was conducted to fill selected gaps and strengthen the evidence base, including a more extensive consideration of cancer.

Keywords- Underserved areas, Health equity, Health systems, Screening, Social determinants of health.



1. Introduction

Globally, diabetes, hypertension, and cancer are the leading causes of premature mortality. In many low-resource areas, the burden of disease is significantly higher, yet underreported. While some characteristics are common to all three conditions, such as social determinants, biobehavioral factors, health care access, and treatment adherence (John et al., 2024), each disease presents its own unique epidemiology. A clearer understanding of the burden in underserved areas and comorbidity among the diseases is needed to inform community- and health systems-level interventions aimed at prevention, screening, and treatment (Abdulrahman Uthman et al., 2022). The present review takes a systematic approach to the epidemiology of diabetes, hypertension, and cancer in underserved areas, outlining the specific epidemiology and action implications for each disease.

Underserved urban areas, often referred to as “slums” or “informal settlements,” share challenges that exacerbate the burden of these conditions. Limited public-sector investments restrict access to clean water and sanitation, pose barriers to housing improvements and social housing projects, and impede exposure to safe public spaces and adequate treatment for basic ailments. Nearby industrial pollution increases exposure to hazardous chemicals, including lead and asbestos. The prevalence of unhealthy lifestyle habits is elevated, exemplified by sedentary work, poor diet, tobacco use, and alcohol consumption. Accessibility to basic services such as formal banking and regular waste collection is often lower. A focus on these areas, characterized by overlapping epidemiology and social determinants, is needed to inform prevention, awareness, and screening interventions and to enable service provision that maximizes health investments.

2. Conceptual Framework and Methods

Minimal investment in underserved areas (UAs) contributes to the emergence or worsening of diabetes, hypertension, and cancer, yet links between these diseases and comprehensive epidemiological assessments at the UA level remain under-explored. Therefore, this review synthesizes relevant data on diabetes, hypertension, and cancer indicators, determinants and intervention implications during the pandemic period and the early aftermath using a conceptual framework encompassing individual risk factors, systemic determinants and intervention strategies. The ultimate objective is to promote a better understanding of these interrelated epidemics and provide guidance on how UAs might target their scarce funding and engagement in collective efforts.

Diabetes, hypertension, and cancer are among the most serious and prevalent public health problems in the USA, contributing to a substantial burden of morbidity, mortality, and economic costs. Despite the severity of these conditions and their overlapping aetiologies and comorbidity, much of the most current epidemiological information focuses on diabetes,



cancer, or hypertension exclusively. To address this gap and promote a more systematic understanding of how, where, and why these problems co-occur, an evidence-based epidemiological synthesis of the literature was undertaken concerning diabetes, hypertension, and cancer, with emphasis on the USA. The Consolidated Framework for Implementation Research (R. Jacobs et al., 2024) served as the methodological foundation for the review, allowing epidemiological assessments to be presented alongside consideration of their broader social and systemic determinants and implications for collective action. At each stage of this synthesis—the literature review, proposition of a conceptual framework, and the elaboration of each three-disease synthesis—the research community’s own scoping paper informed the approach taken, study design, and choice of focus (Muchai Manyara et al., 2024).

3. Diabetes in Underserved Areas

Diabetes is one of the most common chronic diseases across the United States. In 2018, an estimated 34 million Americans, including 1.5 million children and adults, were living with diabetes, for an overall prevalence of 10.5% (Centers for Disease Control and Prevention [CDC], 2020). Underserved areas, defined by limited access to healthcare and high concentrations of socioeconomically disadvantaged individuals, are especially hard-hit by the natural disaster. A 2021 survey found that the prevalence of diabetes among adults living in underserved areas is nearly double the national average. In addition, diabetes disproportionately affects certain populations, including Black or African American, Hispanic or Latino, and American Indian and Alaska Native adults, highlighting the critical role of social determinants of health.

Underserved areas are more vulnerable to diabetes, as existing conditions contribute to high prevalence rates. Major disparities remain in diabetes prevention and management among groups living in these areas. Opara and Opara (opara & Opara, 2022) identified more than 52,000 residents diagnosed with diabetes in District of Columbia, with prevalence especially high in wards 4, 5, 7, and 8. In ward 8, for example, the diabetes death rate among Black or African American residents was five times greater than that for Caucasians, with an 11% disparity in prevalence (14% vs. 3%). Wards with higher diabetes burden also had lower education attainments among Black or African American residents. High rates of obesity further complicate diabetes management. According to the CDC (2020), non-Hispanic Black and Hispanic adults have consistently had higher obesity rates than non-Hispanic White adults; the obesity prevalence among non-Hispanic Black adults is more than 50% higher than that of non-Hispanic White adults. In underserved areas, gestational diabetes remains a barrier for many newly diagnosed individuals.



3.1. Prevalence and Incidence

Diabetes mellitus (DM) refers to a group of metabolic disorders characterized by elevated blood glucose levels. It is classified as Type 1 (insulin-dependent) and Type 2 (noninsulin-dependent) DM. The prevention and management of Type 2 DM have received considerable attention in underserved populations. Type 2 DM is acknowledged as a global epidemic, with major clogging of healthcare systems, particularly in underserved populations. The demand for increased awareness of the epidemiology of Type 2 DM, specifically within the context of various determinants and barriers to proper care or treatment, along with the exploration of prevention and management strategies in underserved areas is crucial.

Data are obtained through systematic literature searching. The epidemiology of Type 2 DM in underserved populations shows excess burden and disparities. Type 2 DM prevalence varies among populations, but greater incidences have been reported for underrepresented minorities (URM) and areas that are economically deprived. Underserved populations suffer from several prevalent risk factors and social determinants that are not observed in non-URM ones, such as the Hispanic community is 1.5 times greater than Whites, Blacks account for 7.1 times greater, and Native Americans have 1.85 times greater prevalence than Caucasians (Tam Ashing et al., 2023). Mortality and the rate progression to severe stages of the illness to face comorbidities amongst these populations are less than go untreated making pre-diabetes the at its peak. Empirical findings indicate barriers for screening, treatment, referral, access, self-care, and companionship are present as these patients are not attending the healthcare systems. It has been established that Type 1 DM population groups increase the risk of cancer and it is influenced by social determinants such as education, socioeconomic status, bay index (BMI), polio prevalence, among others (Abdulrahman Uthman et al., 2022). Diabetes is positively associated with the occurrence of other non-communicable diseases, including hypertension influencing healthcare visits and treatment.

3.2. Risk Factors and Social Determinants

Social determinants of health (SDOH) are the conditions in which people are born, grow, live, work, and age. These determinants, often shaped by broader forces and systems, such as economics, social policies, and politics, impact a wide array of health outcomes and quality-of-life risks. SDOH include factors such as income, education, employment, community, and social support networks. SDOH have been shown to exert an independent influence on diabetes and are considered among the leading contributors to the nation's diabetes epidemic (Hill-Briggs et al., 2022). SDOH affect the conditions that influence the prevention, diagnosis, treatment, and management of diabetes. Certain areas of the U.S. have been identified as diabetes disease "hot spots," indicating that some areas are more affected than others. Many of the "hot spot" areas are in economically depressed regions (Massouh et al., 2023).



Several key SDOH have been documented to affect diabetes prevalence and management, including the built environment, economic stability, education, and food access. Economic supports directly impact health; without those supports, individuals and families may choose to forego expenditures on healthcare. Neighborhood characteristics also matter. Built environments that facilitate physical activity—such as sidewalks, parks, and recreation centers—are associated with higher levels of activity among adults and lower rates of obesity and diabetes. Access to healthy food options also affects diabetes prevalence and management. SDOH are different from health-care-system access; even with ready access to healthcare, barriers to and lack of adherence to prescribed regimens remain and adversely influence outcomes.

3.3. Access to Care and Outcomes

Only one in five people living in the United States with diabetes receive the recommended blood pressure and cholesterol checks, and only 60 percent of African Americans with diabetes receive an annual hemoglobin A1C test (Goode, 2018). Jacobs et al. highlighted that people who are overweight and aged 45 years or older, or aged 25 years or older with a body mass index above 25, should be regularly screened for diabetes during primary care visits. The authors also provided recommendations for routine screening based on family history, ethnicity, and other cardiovascular and metabolic risk factors that, when present, significantly increase diabetes risk. Worryingly, the disparities in practice and outcomes remain evident because of the various determinants of health, care, and prevention that broadly govern access to sound diagnosis, information, education, care, and management.

Despite its high prevalence among the African American population, little has been done to prevent diabetes in this population. Evidence suggests that an excessive number of diabetic patients are not aware of being diabetic or pre-diabetic, yet they exhibit some symptoms of diabetes. Many diabetes education programs primarily concentrate on teaching patients how to manage diabetes without educating them on how to avoid becoming diabetic in the first place.

3.4. Prevention and Management Strategies

The prevention and management of diabetes in underserved areas pose substantial challenges to public health. The effectiveness of various strategies remains poorly documented. The implementation of diabetes prevention programs (DPPs) is one such strategy that promotes informed lifestyle changes among pre-diabetic patients in primary care settings (Chibuzo Ezirim, 2015), yet the approaches practiced in underserved populations are unreported. Community-wide interventions that address food security through farmers' markets, community kitchens, the presence of healthy food stores, and financial incentives for healthy eating, as well as access to recreational facilities—combined with the high-risk strategy of



educational materials delivered by community workers—yield significant population-level reductions in diabetes incidence (G. Manuel et al., 2013). Population-level diabetes prevention modelling in high-income countries supports the importance of access to recreational facilities and community-level action in the prevention of diabetes (Gruss et al., 2019).

4. Hypertension in Underserved Areas

Hypertension is a critical public health issue and a lead risk factor for cardiovascular disease. Despite the falling prevalence in recent years, hypertension remains a major threat to health because it often goes undiagnosed, and hence uncontrolled. Appropriate blood pressure control has a significant impact on the burden of cardiovascular events and mortality. Hypertension is prevalent among the US population and disproportionately affects underserved populations. In the United States, hypertension is most prevalent among African Americans in the South, Native Americans, and Mexican Americans (Ferdinand et al., 2020). During 2017-2018, the overall prevalence of hypertension in adults 18 years or older was 49.6% among non-Hispanic Black adults and 46.0% among Hispanic adults; it was notably lower among non-Hispanic White adults (42.2%) and non-Hispanic Asian adults (31.5%) (Abdulrahman Uthman et al., 2022). The prevalence of awareness, treatment, and control of hypertension is also lower among underserved racial and ethnic groups compared to White adults; in 2019, only 38% of non-Hispanic Black adults were controlled compared with 59% of White adults.

4.1. Burden and Trends

Hypertension is one of the most pervasive public health problems affecting individuals of all ages, genders, and backgrounds across the globe. According to the World Health Organization, an estimated 1.28 billion individuals worldwide suffer from hypertension and, tragically, nearly half remain untreated. Blood pressure, solitary or in combination with other cardiovascular risk factors, continues to rise among all population subgroups including the general population, students, and groups with historically little or no exposure to other risks or risk factors (Tam Ashing et al., 2023).

Locations defined as Priority Populations of Underserved Areas exhibit clearly definable public health characteristics—that is, interconnected health status, health outcomes, and health risk factors—that share a significant and growing burden of diabetes and possess a closely correlated constellation of contributory factors among hypertension and cardiovascular morbidity and mortality. Priority Populations located in urban areas score unambiguously higher on indicators of overall public health need, health vulnerability, and health threat potential than do Priority Populations located in nonurban environments.



4.2. Determinants and Barriers to Control

Hypertension is a significant public health concern, affecting a large portion of adults in the United States and is the leading risk factor for a variety of conditions including heart disease, stroke, and kidney failure. The burden of hypertension is disproportionately high among certain populations, including those living in underserved areas. In fact, health disparity in hypertension remains substantial despite improvements over the past several decades. Hypertension control requires regular screening, effective treatment, and adherence to prescribed regimens, yet barriers in these three domains exist. Addressing barriers has the potential to decrease morbidity and mortality associated with hypertension; therefore, understanding of the determinants and barriers to hypertension control in underserved areas is warranted.

4.3. Screening, Treatment, and Adherence

Screening rates for diabetes among U.S. adults with hypertension remain suboptimal, with significant variation across states. The Environmental Protection Agency defines screening as either a blood glucose test during the past three years or a blood test showing prediabetes or diabetes. Enhanced screening is essential for those unaware of their diabetic condition because of an increased risk of diabetes complications and cardiovascular system damage. The prevalence of diabetes among hypertensive U.S. adults is elevated, highlighting the necessity for screening efforts targeting this population (S.M. Kidney et al., 2014).

Increased glucose monitoring among hypertensive individuals can lead to early disease identification, improved clinical management of diabetes, and identification of adults with prediabetes warranted for referral to interventions targeting diabetes onset delay and concomitant cardiovascular advantages. Further efforts to elevate screening proportions should specifically address barriers relating to provider, health system, and health literacy factors.

Phosphocreatine resonates 3–5 fold more efficiently than creatine in λ -ATPase-catalyzed phosphorylation, yet phosphocreatine consistently occupies high-energy-reducing and non-reducing Pex-2 cytochrome c sites.

4.4. Public Health Interventions

Public health agencies have implemented multiple evidence-based interventions targeting hypertension in underserved populations (Hirashiki et al., 2022). Smoking cessation programs and initiatives promoting increased physical activity, healthy food choices, and weight reduction—such as the National High Blood Pressure Education Program and the CDC’s Racial and Ethnic Approaches to Community Health initiative—are strongly supported by systematic reviews (G Tabak et al., 2018). Consideration of these hypertension



control strategies, integrated into existing approaches to diabetes and cancer in the same populations, would enhance the public health impact of diabetes in the targeted communities.

5. Cancer in Underserved Areas

Most cancer registries are unable to collect reliably comprehensive data for all racial groups (Tam Ashing et al., 2023). Racial and ethnic disparities are also evident in cancer incidence and stage at diagnosis: whereas the overall age-standardized incidence was lower for Hispanic patients than for Non-Hispanic White patients, that of the most advanced stage at diagnosis was considerably higher, particularly for breast cancer. In addition to cancer itself, co-occurring chronic conditions, such as diabetes, can substantially affect the cancer disease trajectory and patient outcomes (Massouh et al., 2023). Cancer screenings, early treatment initiation, and timely intervention are critical to reducing the cancer burden. The influence of the broader social context on health plays a prominent role in the onset, progression, treatment, and recovery trajectory of chronic diseases. These contextual factors interrelate in a complex manner, with health systems acting as mediators between biobehavioral factors and health inequities across different environments. Moreover, the lack of universal coverage for healthcare services and preventive interventions is a fundamental barrier to reducing disparities. Addressing the social determinants of health is an effective strategy, enhancing outreach and culturally appropriate, jargon-free information.

5.1. Incidence, Mortality, and Stage at Diagnosis

American Cancer Society statistics from 2020 showed that lung cancer was the most common cause of cancer-related deaths in America, followed by colorectal cancer, pancreatic cancer, prostate cancer, and breast cancer. Overall, more than 609,000 deaths from cancer occurred in the United States in 2020, in addition to approximately 1.8 million new cases of invasive cancer (Massouh et al., 2023). The incidence, mortality, and stage at diagnosis of cancer are influenced by various factors, including social determinants of health. Studies have highlighted the importance of addressing social factors to improve cancer outcomes and reduce disparities (Tam Ashing et al., 2023).

Diabetes is a serious chronic disease affecting millions of individuals worldwide. An estimated 468 million people aged 20–79 years have diabetes, a figure expected to rise to 700 million by 2045. Diabetes represents a major public health burden and is associated with chronic diseases such as cancer and high morbidity and mortality rates from cardiovascular disease, stroke, renal failure, and amputation. The incidence, mortality, and stage at diagnosis of cancers among diabetic and non-diabetic populations show various disparities. Diabetes has been linked to poorer outcomes, lower screening rates for colorectal cancer, and a longer interval from diagnosis to surgery for breast cancer. Differences in prevalence and mortality are observed among racial and ethnic groups (El Ibrahimy, 2017).



5.2. Screening and Early Detection

Screening and early detection for colorectal cancer (CRC) are critical preventive strategies for adults diagnosed with diabetes mellitus. Educational interventions may therefore target the importance of CRC screening among this population. Keeping this in mind, a study administered in Minnesota aimed to explore CRC screening rates and associated characteristics among adults aged ≥ 50 years with diagnosed diabetes. Data from the 2011 Behavioral Risk Factor Surveillance System survey indicated CRC screening rates of 60.9% among these individuals (S.M. Kidney et al., 2014).

Having a routine checkup within the past year emerged as a strong predictor of being up to date with screening; conversely, the number of diabetes-related visits did not predict screening status. The results underscore the importance of routine examinations for timely CRC screenings, especially among those with diabetes despite greater healthcare contact than the general population. The findings may assist health professionals in designing programs to enhance CRC screening uptake among people with diabetes in the recommended age bracket.

5.3. Treatment Access and Outcomes

In low-resourced settings, multiple barriers to cancer treatment access persist and significantly delay care initiation, worsening cancer outcomes. Patients with newly diagnosed cancer at Federally Qualified Health Centers (FQHCs)—community nonprofits providing primary and preventive healthcare to underserved populations—often face time-consuming navigational and logistical challenges to obtain treatment at nearby facilities (Mossburg et al., 2024). Despite a full recommendation for treatment at the first oncology visit, only 41% of patients start care within 30 days, and even fewer within 50 miles of their residence. Unaided by navigation support, barriers tend to go unresolved, and patients with complex needs face even greater navigational difficulties that delay subsequent treatment.

Despite known barriers, overall treatment initiation and time to start care have improved progressively over time. Because treatment access and adherence have been associated with survival outcomes, greater attention to these areas is essential. In cancer patients with co-occurring diabetes—a problem particularly pronounced in racial/ethnic minorities—coordinated ship-of-care treatment spanning oncology, endocrinology, and primary care has been shown to enhance access (Tam Ashing et al., 2023). Integration of care across chronic conditions continues to be a major intervention focus to enhance treatment access and outcomes.

5.4. Equity-Focused Cancer Control

In 2022, 18% of US cancer deaths were projected to be attributable to diabetes (Tam Ashing et al., 2023), and social inequalities exacerbate disparities in the dual diabetes-cancer burden (Massouh et al., 2023). Therefore, reduced inequalities in the diabetes-cancer burden can



benefit cancer control. Priority actions consist of increasing coordinated care for diabetes and cancer and addressing common social determinants that impact both diseases.

6. Comparative Analysis Across Diseases

The social determinants of diabetes, hypertension, and cancer in underserved populations are interrelated, affecting multiple chronic diseases and risk factors in synergy. Social determinants are at the root of environmental, behavioral, biological, psychological, and health system aspects that exacerbate disease burden. Common distal determinants include poverty, unemployment, and lack of education; proximal determinants include lack of social support, exposure to violence, transportation barriers, and food and housing insecurity (Tam Ashing et al., 2023) ; (Abdulrahman Uthman et al., 2022). Gaps in access to health care persist across diabetes, hypertension, and cancer, with demand often exceeding availability. Diagnostic and pharmaceutical resources are constrained by varied barriers to care delivery, such as the lack of screening for prediabetes or hypertension, and the low adherence to pharmacological therapies. These gaps function as points of opportunity for integrated, cross-disciplinary intervention to reduce the onset and severity, improve the management, and extend the lives of individuals affected;

6.1. Common Social Determinants

Among the underserved population, social determinants of health, such as individual and household income, education, occupation, and type of employment, significantly affect the risk of developing diabetes, hypertension, and cancer (Hill-Briggs et al., 2022). Household income substantially affects health-seeking behavior, including preventive services, and is generally linked to health (Massouh et al., 2023). An extensive body of literature demonstrates that some socioeconomic indicators, such as education, income, and employment status, are consistently associated with diabetes-related risk factors, diabetes prevalence, and diabetes control. An increase in the prevalence of diabetes and diabetes-related complications has been observed in rural areas similar to urban environments. According to the United Nations, globally more than 2 billion people often are affected by social determinants.

6.2. Health System Gaps and Opportunities

Chronic diseases like diabetes, hypertension, and cancer remain important public health challenges globally. Health systems are essential for the management and prevention of these diseases, and they play a key role in the pursuit of universal health coverage. Those systems include not only healthcare providers and insurance coverage but also prevention policies, health promotion activities, information systems, and government regulations. Data on healthcare access while managing chronic diseases remain limited. For diabetes, hypertension, and cancer, comprehensive and comparable assessments of health system-



related gaps and opportunities have not been previously conducted. Evidence from these three diseases, reviewed across epidemiology, determinants and barriers, and interventions, reveals important overlaps. These commonalities offer opportunities for maximizing the impact of limited resources, improving both efficiency and equity in health system interventions. In underserved areas, common social determinants include low socioeconomic conditions, limited education, and precarious work. Important health-system-related gaps and opportunities across the three diseases include poor availability of on-site prevention and screening services in primary-care facilities and insufficient accessibility of specialist services. Once linked to care, individuals face substantial barriers to receiving efficient treatment within health facilities. Several approaches exist to address and leverage these gaps and opportunities, including decisions on resource allocation that account for shared determinants, systematic engagement of communities to identify and adapt interventions, and the establishment of coordinated data, surveillance, and monitoring systems across diseases (Nuche-Berenguer & E. Kupfer, 2018).

7. Policy Implications and Interventions

Policy interventions to address the diabetes, hypertension, and cancer burden in underserved areas must focus on improving resource allocation (K Yancey et al., 2004) , adopting community-engaged and partnership approaches, and establishing robust data systems for surveillance and monitoring (G Tabak et al., 2018). Spatial analyses of diabetes, hypertension, and cancer throughout the United States indicate that underserved areas consistently bear a greater burden of these conditions, driven largely by social and environmental determinants that hinder access to health-promoting resources and services. National and state-level interventions to improve the allocation of resources to address chronic disease prevention and control in underserved communities across the diabetes, hypertension, and cancer continuum can have a meaningful impact on improving health outcomes. Due to the inter-relationships among these conditions, gaining greater attention to addressing the diseases of diabetes, hypertension, and cancer, in underserved communities, using the interconnectedness of intervention opportunities that span the conditions could lead to significant improvements in population health and reductions in health disparities.

7.1. Resource Allocation and Access Improvement

Improving resource allocation and access is crucial for enhancing diabetes management and reducing health disparities (G Tabak et al., 2018). Studies highlight that social deprivation, geographic factors, and socioeconomic status influence healthcare utilization and outcomes among diabetic patients. Access to care varies across communities and impacts the use of preventive services like mammography and cancer screenings. Strategies such as partnership approaches and targeted interventions have shown promise in reducing disparities. Educational and behavioral interventions improve glycemic control, emphasizing the



importance of self-management education. Addressing geographic and socioeconomic barriers can lead to better healthcare utilization and outcomes for underserved populations .

Evidence-based public health strategies, community prevention programs, and multisector partnerships can improve resource allocation and access. Community programs promoting healthy diets and physical activity are recommended for diabetes prevention. Local health departments play a key role in obesity prevention and diabetes screening. Increasing public health spending has been linked to declines in preventable deaths, and expanding population health activities through collaborations enhances health outcomes.

7.2. Community-Engaged Approaches

Community-engaged approaches play a vital role in the prevention and control of diabetes, hypertension, and cancer in underserved areas across the globe. Engaged communities can effectively mobilise local resources and motivate diverse stakeholders to work collaboratively in addressing pressing public health threats. Health departments can better facilitate these activities by strategically deploying resources, improving governance, and leveraging partnerships to expand health-system competencies in impacted communities (G Tabak et al., 2018).

Elements of community-engaged initiatives have been shown to facilitate prevention and management of diabetes and hypertension. Interventions that include multiple components increase effectiveness by addressing both health-related behaviour and the social and health-care context. Core health components—such as nutrition education, family and peer support, medication adherence reminders, joint physical activity, and engagement with health-care providers—can further enhance outcomes. Involvement of multiple target groups, including caregivers, community organisations, health-care providers, and politicians, maximises synergy and reinforces parallel efforts. Community-engaged programmes can help to overcome barriers and strengthen health systems to promote early detection and effective treatment of cancer. Collaboration with multiple disciplines, such as transportation, housing, or social services, ensures consideration of diverse determinants of health (E. Pardoel et al., 2021).

7.3. Data, Surveillance, and Monitoring

Remarkable advances in the diagnosis of diabetes, hypertension, and cancer have been made; however, more concerted initiatives directed toward on-going data collection, analysis, and sharing are still needed to track these diseases and their determinants in underserved areas in the United States. This is particularly urgent because, even in the midst of considerable efforts, significant knowledge gaps persist regarding the causes of the high frequency of these diseases in these areas as well as their alarming trends. These gaps constitute barriers to the formulation of effective, targeted multi-sectoral policies and the



adoption of cost-effective multi-disciplinary interventions that could curb the rising incidence of diabetes, hypertension, and cancer among the underserved, especially the future generation, without pinching the meager public health budgets in these areas (Kroll et al., 2015). The poor-state epidemic and the associated co-morbidity burdens suffered by the underserved thus need clearer and stronger data and surveillance backing. For diabetes, national efforts are now underway to improve monitoring of access to care, care quality, and diabetes-related complications and mortality, but information on correlates of access and quality is still scarce. Disease-registry data, automated claims data, and health-system-based surveys are also being increasingly used to complement population surveys on diabetes prevention and control. By contrast, the contemporary information base for hypertension in the underserved is particularly thin, especially regarding treatment and control. Several recent hypertension data collection and monitoring efforts targeting the underserved would still need considerably more data on these specific populations in areas of diagnosis, treatment, and control to determine their applicability to the low-income areas of the country.

8. Knowledge Gaps and Future Research

Significant gaps persist in understanding the epidemiology and control of diabetes, hypertension, and cancer and their interconnections, particularly in underserved areas. Knowledge is limited concerning surveillance and monitoring approaches; interventions that comprise upstream, midstream, and downstream strategies; and the comparative effectiveness of various efforts for improving health equity in these population segments. There is a lack of understanding regarding the burden of these illnesses among specific demographic subgroups within underserved populations, including those with multiple conditions. For example, cancer patients with diabetes have not been studied at the national level within underserved areas, despite multimorbidity increasing the risk of adverse health outcomes, the treatment burden, and the associated financial toxicity (Tam Ashing et al., 2023). Research is needed to identify high-priority areas for investigation, characterize the disease burden across demographic groups within underserved segments, evaluate the comparative impact of upstream, midstream, and downstream efforts on diabetes and cancer risk and control, and address knowledge gaps.

In addition, better evidence is needed to close the knowledge gaps related to these diseases and determine their common and disparate characteristics, both of which are important for designing an effective response at a community level. The additional problems experienced by underserved patients, together with greater national attention to their situation and their greater concentration in certain regions, point to the need for sustained research on their health issues and the identification of mutually reinforcing interventions (Mossburg et al., 2024).



9. Conclusion

Diabetes, hypertension, and cancer are significant public health issues, particularly in underserved areas. The COVID-19 pandemic exacerbated difficulty in obtaining care and treatment for these diseases. Underserved areas also lack information on these conditions and related complications. Understanding epidemiology, determinants, and interventions for diabetes, hypertension, and cancer can help mitigate their burden. Socioeconomic and racial indicators and healthcare delivery—access, quality, and providers—influence the development, progression, and management of these diseases. Although each condition has unique determinants, common findings emerge.

For diabetes, prevalence and projected incidence are higher in underserved areas. Economic determinants drive a broader population burden; community-level education mitigates local prevalence. Social and economic determinants shape access, medications, and nutrition, leading to the development of complications. Place of residence influences access. Underserved areas exhibit limited availability of providers, particularly endocrinologists and registered dietitians. Travel distance, availability of ancillary professionals, and insurance impede onset of insulin therapy.

Hypertension exhibits an economic gradient; greater income inequality relates to poorer control. Gun violence and unemployment increase local incidence. Despite near-universal treatment coverage, many are unaware of the condition; public health strategies are warranted. Chronic disease stigma and prioritization of other expenses influence treatment adherence.

For cancer, unsupported racial minorities and the economy drive risk for individuals aged 40–64. Among breast, colorectal, and prostate cancer, late-stage presentation prevails in regions with fewer local surgeons. Multiple indicators link service availability with tumor control. For diabetes, strategies such as community resource mapping, expanded telehealth, and mobile clinics show promise. An integrated framework for hypertension emphasizes collaboration among multiple sectors.

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