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Leveraging Policy Solutions for Diabetes Disparities: Suggestions for Improving the National Clinical Care Commission Report's Recommendations for Hispanic/Latino Populations

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Abstract
In the U.S., Hispanic/Latino populations face increased disparities in both the prevalence and management of type 2 diabetes mellitus (T2DM). This article critically examines the multifaceted nature of T2DM disparities among Hispanic/Latino populations in the U.S. and identifies key factors contributing to T2DM prevalence within these communities, including socioeconomic status, cultural influences, and healthcare access. Utilizing a modified expert consensus procedure, we evaluate the ways in which the National Clinical Care Commission (NCCC) recommendations apply to the Hispanic/Latino community as well as propose recommendations for improved efficacy. Through a comprehensive analysis of government-community health initiatives, food security, environmental exposures, and housing inequalities, we emphasize the need for targeted interventions and health policies to effectively address and dismantle these disparities. Overall, while the National Clinical Care Commission's recommendations provide a valuable framework for the implementation of policies pertaining to diabetes management and prevention in the general population, our analysis suggests that recommendations may be strengthened by considering the unique cultural, social, and economic needs of the Hispanic/Latino population moving forward.

Keywords Health disparities; Hispanic · Latino · Health; Public health policy; Diabetes · Policy

Introduction

In the U.S., Hispanic/Latino populations have an increased incidence of T2DM in comparison to non-Hispanic White (NHW) groups [1, 2]. Data from the National Health and Nutrition Examination Surveys between 2011 and 2016 reveal a prevalence of 22.1% in Hispanic/Latino populations, in contrast to 12.1% in NHWs [1]. This extends to complications; compared to NHW adults with T2DM, Hispanic/Latino adults exhibit higher rates of albuminuria and retinopathy [3] and lower rates of annual HbA1c testing, foot exams, eye exams, and poorer glycemic control [4]. These disparities underscore the multifaceted nature of diabetes-related health inequities among Hispanic/Latino populations in the U.S. and the urgent need for targeted interventions addressing various contributing factors. Decades of research highlight the multifaceted nature of health disparities, including factors such as access to neighborhood resources, immigration-related status, health insurance status, socioeconomic status, cultural influences, nutrition, and environmental conditions, all of which compound the challenges in preventing and managing T2DM effectively [5, 6].

Insights from the Hispanic Community Health Study/Study of Latinos (HCHS/SOL) reveal significant differences within Hispanic/Latino populations regarding T2DM [7, 8]. Puerto Ricans, Dominicans, and Mexicans had higher T2DM rates compared to those from South American backgrounds, indicating diverse cultural and genetic influences. Key factors influencing T2DM prevalence include age, BMI, education level, income, and duration of U.S. residence [7]. Alarmingly, the study highlights gaps in diabetes awareness, control, and healthcare access, with only 58.7% aware of their condition, 48.0% achieving adequate glycemic control, and just 52.4% having health insurance among those with diabetes. The presence of population-level diabetes-related disparities, as well as

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the nuances in intergroup variability, necessitates interventions suitable to address the complexity of diabetes prevention and management in Hispanic/Latino populations.

Nearly 50 years ago, the National Commission on Diabetes first issued its report to the U.S. Congress. More recently, in response to the growing T2DM epidemic, Congress passed the National Clinical Care Commission (NCCC) Act (Public Law 115–80) in 2018 [8]. This led to the establishment of the NCCC by the Secretary of Health and Human Services. The NCCC's duty involved reviewing federal policies and proposing enhancements to more effectively prevent and manage T2DM and its complications [9]. At its core, this endeavor aimed to provide recommendations aimed at reducing the incidence of T2DM among vulnerable populations and improving outcomes for individuals already affected by the disease. Through extensive research, public input, and collaboration with federal agencies, the NCCC developed a report with 39 key recommendations, emphasizing a comprehensive government approach, healthy equity, and enhanced healthcare access [9, 10]. The NCCC's report provided recommendations that can highlight many of the disparities faced by Hispanic/Latino populations regarding T2DM [9]. However, prior literature has not examined the unique ways in which NCCC recommendations may be tailored to specific minority groups, which may reveal insights critical for effective policy implementation. This article evaluates the efficacy of those specific recommendations in addressing the root causes of T2DM disparities and proposes additional measures for improving the prevention, diagnosis, and management of T2DM within Hispanic/Latino populations.

Methods

A diverse team of seven experts used the Template for Rapid Iterative Consensus of Experts (TRICE) framework to review the NCCC report [11]. Six stages recommended by TRICE, including identification of a need, identification of stakeholders, creation of a working group, two rounds of iteration, and final draft review, were adopted [11]. The final two stages (i.e., implementation and evaluation) are not applicable to this manuscript, given that the focus is to review literature pertinent to the Hispanic/Latino community and suggest modifications to preexisting policies with regard to a specific population.

The panel included five female experts and two male experts with expertise in endocrinology, metabolism and nutrition, diabetes care, Hispanic/Latino health, hospital medicine, population health, community-engaged research, health equity, public policy, and advocacy (Table 1). Representing different institutions, the group, which included a member (AD) involved in NCCC development, had extensive experience caring for and being part of the Hispanic/Latino communities in the U.S. They selected eight recommendations specifically relevant to Hispanic/Latino populations from a pool of 39; these recommendations were selected as examples of interventions targeting modifiable social and economic barriers. Led by one member (DS), the draft underwent iterative revisions, incorporating evidence and feedback from diverse stakeholders. The final manuscript received unanimous approval from all group members, signifying a comprehensive evaluation of NCCC recommendations in the context of their impact on the Hispanic/Latino populations in the U.S.

Results and Discussion

Summary

In each section, we thoroughly analyze NCCC's initial recommendations, emphasizing any disparities or barriers, and then suggest modifications and considerations for implementation. The complete NCCC report includes three overarching areas focused on foundational recommendations applicable to the general population (e.g., addressing the social determinants of health), population-level disease management (e.g., addressing nutrition and housing insecurity), and preventive measures in select populations (e.g., patients with prediabetes). A summary of all 8 included NCCC recommendations and modifications by the expert panel is provided in Table 2. Our evaluation was organized into four lenses: the role of government-led community health initiatives, food security, environmental exposures, and building healthier homes.

Breaking Barriers: Government-Led Community Health Initiatives

The recommendations in this section emphasize the need to tailor national strategies to suit local communities and promote community-centered approaches in addressing health disparities, including innovative strategies for T2DM prevention.

NCCC Recommendation 3.1: Community-Based Interventions

In line with NCCC Recommendation 3.1, the establishment of the Office of National Diabetes Policy (ONDP) is proposed to coordinate federal efforts in combating the T2DM epidemic. Multiple community-based studies have shown that individuals from Hispanic/Latino communities desire accessible interventions at the local level, ranging from dyad-focused communication workshops (between two people who have a preexisting relationship) to workplace interventions led by trusted local community leaders [12,

Table 1 Expert panel credentials and expertise. A description of the current positions and expertise of the 7-member panel (DS, SR, JG, AT, MC, AD, and LC) included as stakeholders to provide input into this policy analysis

Author(s)	Positions	Expertise
Devika A. Shenoy, BS (DS)	Duke University School of Medicine medical student	Focuses on health policy and advocacy and uses local and state-led policy changes to impact healthcare delivery and equity. Experience working with numerous grassroots advocacy organizations aiming to improve access to healthcare for populations with socioeconomic disadvantage
Stephanie H. Rodriguez, BA (SR)	University of Iowa Carver College of Medicine medical student	Experience providing healthcare services to underserved urban communities, with a focus on Spanish-speaking populations and low-income individuals, through free medical and mental health clinics
Jeydith Gutierrez, MD, MPH (JG)	Clinical associate professor of Internal Medicine-General; vice chair for Diversity, Equity and Inclusion, Department of Internal Medicine; director and telehospitalist service at Iowa City VA Medical Center	Specializes in health disparities, health equity, and implementation science, with a focus on minority health, veterans' healthcare, and telemedicine. Develops evidence-based practices to address health disparities and telehealth curriculum
Andrea Thoumi, MPP, MSc (AT)	Health equity policy fellow and core faculty member at the Duke-Margolis Center for Health Policy; adjunct assistant professor at the Duke-Margolis Center for Health Policy; consulting associate in Family Medicine and Community Health	Focuses on health policies to mitigate structural and social determinants of health leading to inequities among Latine communities and those accessing reproductive health services. Expertise in health policy, financing, equity, and community health. Leads projects related to community-based COVID-19 testing and vaccination strategies, expanding insurance enrollment among Latine communities, and linking community-engaged research to policy changes. Member of the Latinx Advocacy Team & Interdisciplinary Network for COVID-19 (LATIN-19) executive team
Marcelo L. Correia, MD, MSc, PhD (MC)	Clinical assistant professor of Internal Medicine-Endocrinology and Metabolism	Adult endocrinologist. Research focuses on the metabolic effects of skeletal muscle-specific depletion of dynamin-related protein 1 (DRP1), including the establishment and validation of murine models. Investigates molecular mechanisms underlying protection from weight gain and diabetes during high-fat diet. Clinical research interests include assessing the utility of a very low-calorie diet for non-alcoholic fatty liver disease management and investigating diabetic neuropathy diagnosis and treatment. Also, clinical trials targeting and enrolling only minority populations. Co-investigator in international randomized clinical trials sponsored by pharmaceutical industries. Expertise in endocrinology, diabetes, metabolism, and molecular biology
Ayotunde Dokun, MD, PhD, FACE (AD)	Professor of Internal Medicine-Endocrinology and Metabolism; professor of Molecular Physiology and Biophysics; Verna Funke chair in Diabetes Research, Fraternal Order of Eagles Diabetes Research Center (FOEDRC); director at the Division of Endocrinology and Metabolism, Internal Medicine; member of the NCCC panel	Adult endocrinologist. Research focuses on the association between diabetes and poor outcomes in peripheral artery disease (PAD). Investigates specific metabolic abnormalities in diabetes affecting expression and function of novel genes involved in favorable adaptation following experimental PAD. Identifies miRNAs involved in impaired post-ischemic adaptation in diabetes vascular complications. Develop novel therapies for the treatment of PAD in diabetes. Expertise in endocrinology, diabetes, metabolism, and molecular physiology

Table 1 (continued)

Author(s)	Positions	Expertise
Leonor Corsino, MD, MHS (LC)	Associate professor of Medicine (tenure) and Population Health Sciences; co-director for the Duke Clinical and Translational Science Institute—Community-Engaged Research Initiative (CERI). Former director for the Duke Population Health Improvement Mapping project	Adult endocrinologist. Research focuses on health disparities, particularly among Hispanic/Latino populations, diabetes, obesity and related complications. Collaborates extensively with investigators locally, nationally, and internationally. Affiliated investigator in the Hispanic Community Health Study/Study of Latinos. Founding member of the Latinx Advocacy Team & Interdisciplinary Network for COVID-19 (LATIN-19) executive team

13]. Interventions in churches, workplaces, through personalized messaging, and integrated health-behavior-education clinics have shown promise in T2DM-related health behaviors and outcomes, including HbA1c levels, medication adherence, decreased high-fat food consumption, and increased participation in exercise [12–15]. To broaden the reach, hair salons and barber shops, recognized as vital community hubs, should be incorporated into intervention strategies. This comprehensive approach accommodates the diverse needs of Hispanic/Latino employees, aligning with their busy schedules, religious beliefs, family responsibilities, and resource constraints. By aligning federal (ONDP) and local (community-based) efforts, resources can be effectively utilized, ensuring the implementation of trustworthy interventions.

NCCC Recommendation 3.2: Government Tackling Healthcare Barriers

Access to healthcare in minority communities is a complex issue that extends beyond the presence of comprehensive, high-quality, affordable healthcare. Even in communities where such systems exist, language barriers, costs, lack of transportation, childcare needs, limited trust in the healthcare system, work-related migration, and lower literacy levels, among other factors, can impede the utilization of available care [16, 17]. Thus, government-level interventions are responsible for ensuring institutional availability and investing in the education of more Spanish-speaking providers, translator services, and telehealth services to ensure equitable access to T2DM care and counseling for Hispanic/Latino communities facing these barriers. Additional efforts to develop payment models that include culturally appropriate resources, for example, compensation for community health workers and extension of provider visits to account for translation services, are needed to provide equitable quality care to patients whose preferred language is not English. The responsibility of these government initiatives will encompass monitoring the rapidly changing landscape of medical literature pertaining to accessing care in minority communities and promoting dynamic changes to intervention and implementation strategies.

NCCC Recommendation 5.5: Prevention Strategies

Researchers have identified many factors that may contribute to low success rates for interventions that have been piloted for T2DM prevention in Hispanic/Latino communities, including but not limited to low appointment availability, distance to travel, financial costs, childcare access, and low health literacy [18–20]. SMS-based interventions, coupled with real-time feedback, show promise in overcoming these hurdles [19]. Additionally, researchers evaluating prevention

Table 2 A comparison of NCCC recommendations with this expert panel's expansion of recommendations. A side-by-side depiction of the original wording of the 7 NCCC recommendations that this panel chose to focus on compared with modifications centered around improving efficacy and applicability to the Hispanic/Latino community

NCCC recommendation	Original recommendation*	Modified recommendation
3.1	"The NCCC recommends the creation of the Office of National Diabetes Policy (ONDP) to develop and implement a national diabetes strategy that leverages and coordinates work across federal agencies and departments to positively change the social and environmental conditions that are promoting the type 2 diabetes epidemic. The National Clinical Care Commission further recommends that the ONDP be established at a level above the U.S. Department of Health and Human Services (HHS) and be provided with funding to facilitate its effectiveness and accountability."	We recommend allocating a sizable portion of the ONDP budget to preexisting state, county, and local city-level offices. These offices should focus on tailored interventions for Hispanic/Latino communities, including workplace programs, church initiatives, and interventions in community hubs like hair salons and barber shops. If certain communities lack such offices, funds should be allocated for their establishment
3.2	"The NCCC recommends that federal policies and programs be designed to ensure that all people placed at greater risk for or living with diabetes have access to comprehensive, high-quality, and affordable health care and that no one at risk for or with diabetes who needs health care cannot get it because of cost."	We recommend the creation of specific programs that address language, cost, and transportation barriers to access to care. Invest in the education and availability of bilingual and bicultural providers, translator services, and telehealth to bridge healthcare access gaps. Develop payment models that include culturally appropriate resources, such as compensation for community health workers and extension of provider visits to account for translation services
4.2	"The NCCC recommends that USDA non-SNAP feeding programs be better leveraged to prevent type 2 diabetes in women, children, and adolescents by (1) enhancing Special Supplemental Nutrition Program for Women, Infants, and Children (WIC); (2) further harnessing the National School Lunch and Breakfast Programs to improve dietary quality; and (3) expanding the Summer Nutrition Programs and the Fresh Fruit and Vegetable Program."	We recommend addressing barriers to SNAP enrollment among Hispanic/Latino populations by exploring and mitigating factors such as fear related to immigration status, language barriers, lack of awareness about eligibility criteria, and social stigma associated with accepting government assistance. Create strategies to engage different local communities, local organizations, and community centers to provide insight and develop a comprehensive, community-centered solution
4.3	"The NCCC recommends that resources be provided to USDA to create an environmentally friendly and sustainable U.S. food system promoting the production, supply, and accessibility of foods such as "specialty crops" (fresh fruits, dried fruits, vegetables, tree nuts) that will attenuate the risk for type 2 diabetes and the complications of diabetes."	We recommend (1) allocating resources to address grocery store disparities and food deserts, (2) conducting comprehensive evaluations of neighborhood food quality, and (3) expanding USDA programs beyond SNAP to enhance the production, supply, and accessibility of healthy foods, especially in Hispanic/Latino farming communities. Subsidizing crop production and preservation within these communities
4.4	"The NCCC recommends that all relevant federal agencies promote the consumption of water and reduce the consumption of sugar-sweetened beverages in the U.S. population, and that they employ all the necessary tools to achieve these goals, including education, communication, accessibility, water infrastructure, and sugar-sweetened beverage taxation."	We recommend that additional funding be allocated to ensure access to safe drinking water for all communities. Free, safe drinking water must be available at all public buildings. Reduce the consumption of sugar-sweetened beverages in Hispanic/Latino communities through community-focused education initiatives addressing historical and research-backed conceptions about the quality of public drinking water sources. Employ necessary tools, including education, communication, accessibility, water infrastructure, and sugar-sweetened beverage taxation, to achieve these goals. Prior to the implementation of any sugar-sweetened beverage taxation, access to safer and healthier drinking water should be achieved

Table 2 (continued)

NCCC recommendation	Original recommendation*	Modified recommendation
4.8	"The NCCC recommends that all federal agencies whose work influences the ambient (air, water, land, and chemical) and built environments modify their policies, practices, regulations, and funding decisions to lead to environmental changes to prevent and control diabetes."	We recommend that federal agencies enact targeted interventions and policies to regulate and reduce the impact of environmental pollutants on the Hispanic/Latino populations. These hazards include the regulation of endocrine-disrupting chemicals (EDCs) in agriculture, heavy metal contamination in water, air pollutants, personal care products, and household items. Additionally, initiatives should be undertaken to promote healthier food production and consumption and address built environment factors influencing physical activity. Collaboration between federal agencies and community stakeholders is essential to formulate culturally tailored educational campaigns, fostering awareness about environmental risks and empowering the Latino community to advocate for healthier environmental policies
4.9	"The NCCC recommends that, to reduce type 2 diabetes incidence and diabetes complications, housing opportunities for low-income individuals and families be expanded, and that such individuals and families be housed in health-promoting environments."	We recommend expanding housing opportunities for low-income Hispanic/Latino individuals and families in health-promoting environments. Integrate housing insecurity assessments into healthcare providers, federally funded organizations, and employer routines. Prioritize social resources for support, equitable development strategies, affordable housing, and income support policies for marginalized communities. Implement equitable development in gentrification, emphasizing affordable housing. Target smoking cessation resources in dense areas, especially rural settings. Address secondhand smoke exposure and housing policies for cannabis and tobacco challenges in shared multiunit housing, ensuring comprehensive protection while considering smoking-related beliefs
5.5	"The NCCC recommends, consistent with provisions of the Patient Protection and Affordable Care Act, that all insurers be required to provide coverage for participation in and completion of a CDC-recognized diabetes prevention program for those who are eligible."	We recommend ensuring coverage for CDC-recognized diabetes prevention programs for eligible Hispanic/Latino populations. Advocate policy changes for coverage of culturally tailored programs and allocate resources for implementation within these communities. We encourage funding community-centered prevention programs that actively seek real-time feedback from minority communities to address implementation barriers. Drawing from lessons learned during the COVID-19 pandemic, it is imperative for public health officials to collaborate with community leaders to develop culturally nuanced materials for T2DM prevention. Translation alone is insufficient; collaboration ensures accessibility and cultural relevance

Source/notes: NCCC [9] Report to Congress on Leveraging Federal Programs to Prevent and Control Diabetes andIts Complications 2021. Available from: https://health.gov/about-odphp/committees-workgroups/national-clinicalcare-commission/report-congress

*is for the original recommendation in the NCCC report

programs for Hispanic/Latino communities suggest that using a family-based programming framework with adolescent breakout sessions and culturally competent facilitators, in addition to providing coping skills for adolescent-specific psychosocial stressors, can help address unmet social and cultural needs within current prevention networks [20]. Government funding should be allocated to community centers to be able to thoroughly develop and implement culturally tailored T2DM prevention programs.

Food Security

The recommendations evaluated in this section examine the relationship between food insecurity and/or nutrition status with T2DM. These recommendations emphasize addressing SNAP enrollment disparities and expanding beyond SNAP to tackle broader food quality and accessibility issues.

NCCC Recommendation 4.2: Overcoming Barriers to SNAP Enrollment

According to USDA trends, despite 53 million U.S. individuals living at or below 130% of the poverty line, approximately 41 million were enrolled in SNAP [21]. The USDA does not provide a breakdown of these data by race or ethnicity; however, despite having a disproportionately high poverty rate of 16.9%, only 13.5% of SNAP households were identified as Hispanic/Latino in origin [22, 23]. The disparities in SNAP enrollment likely stem from a complex interplay of factors that are also observed in other public benefit programs, such as Medicaid. These factors include fears related to immigration status, language barriers, lack of awareness about eligibility criteria, and the social stigma associated with accepting government assistance. Policies such as the public charge rule exacerbate these barriers, deterring eligible individuals from seeking assistance due to concerns about immigration status repercussions [24]. Colorado's task force identified barriers to enrollment, such as the length of appointments, social perceptions that accepting help was a sign of weakness, fearing denial of legal status, and the inability to attend appointments due to lack of childcare or transportation [25]. The association between SNAP enrollment and lower rates of T2DM is complex and may involve many factors, ranging from dietary health to self-reported reductions in cost-related medication nonadherence [26, 27].

In Hispanic/Latino populations, misinformation about SNAP participation, among other repercussion fears (payback obligation, military conscription, college aid ineligibility, child removal, and noncitizen family member penalties), contributes to low enrollment among SNAP-eligible and WIC-eligible groups [28]. It is also important to note that food insecurity in the U.S. Hispanic/Latino households differs by origin, with the highest rates reported in Puerto Rico (25.3%), Mexico (20.8%), Central and South America (20.7%), and Cuba (12.1%) [29]. Recognizing cultural values like pride and self-sufficiency, along with family obligations, is crucial when developing tailored strategies to engage different communities effectively. Partnering with local organizations and community centers can provide valuable insights into specific barriers and facilitate the creation of comprehensive, community-centered solutions aligned with preexisting NCCC recommendations.

NCCC Recommendation 4.3: Tackling Food Inequality Beyond SNAP

Expanding SNAP alone may not suffice to address all contributors to food insecurity, including access disparities in food deserts [30]. The NCCC's guidelines include modifying USDA programs that support farmers in making the U.S. food supply healthier, including the Specialty Crop Block Grant Program, the Specialty Crop Research Initiative, and the Healthy Food Financing Initiative (HFFI) [9]. While these recommendations are important, acknowledging socioeconomic disparities in food quality access is equally important. Community feedback from rural, low-resource Hispanic/Latino communities underscores concerns about the affordability of high-quality food options, despite the proximity of viable produce sources [31]. Residents highlight the potential of nonretail outlets, such as local fruit and vegetable stands, as preferred alternatives to traditional retail outlets [31]. The insights gathered from these communities emphasize the potential for innovative solutions, such as subsidizing crop production and preservation within Hispanic/Latino farming communities, to significantly contribute to the proliferation of nonretail venues, such as local farmer stands, thereby enhancing access to affordable, high-quality food options.

Environmental Exposures

These recommendations emphasize the need to educate communities on water quality, address environmental hazards, and recognize the profound impact of the environment on health outcomes.

NCCC Recommendation 4.4: Education on Water Quality

Water systems in Hispanic/Latino communities exhibit higher levels of nitrates compared to other areas [32, 33]. This disparity is statistically significant, even when considering county-level cropland and livestock production [33]. In other words, simply being Hispanic/Latino is a risk factor for having higher levels of certain toxins in proximal drinking water. Even with access to safe water, low consumption of

fluoridated water persists among Hispanic/Latino residents due to quality disparities and trust issues [34, 35]. After speaking directly with community members, researchers purport that any solutions must engage both Spanish-speaking healthcare professionals and community stakeholders [34]. To achieve the NCCC's goal of promoting safe drinking practices, historically and research-backed conceptions about the quality of public drinking water sources must be addressed through community-focused education initiatives.

NCCC Recommendation 4.8: Mitigating Environmental Hazards

Extensive research consistently underscores the connection between environmental exposures and T2DM outcomes within the Hispanic/Latino community. From heavy metal contamination in water (including arsenic, molybdenum, copper, and cadmium) to exposure to a mixture of eight metals and various air pollutants (PM2.5, O3, NO2, and black carbon), this population faces heightened risks of gestational and incident T2DM and cognitive impairment [36–40]. In fact, exposure to outdoor pollutants may increase susceptibility to conditions such as T2DM, perhaps offsetting the benefits of outdoor exercise [39]. Persistent organic pollutants, lipophilic POPs, and EDCs such as BPA and phthalates further contribute to dysregulated glucose metabolism and escalating T2DM risk, with notable implications for Mexican women [41, 42]. These robust findings underscore the imperative of recognizing and addressing environmental exposures to effectively mitigate T2DM risk within the Hispanic/Latino population.

After a comprehensive review of EDCs and their role in childhood obesity among Hispanic/Latino youth in the U.S. and Latin America, several policy recommendations were identified. These include regulating EDC use in agriculture, personal care products, and household items; implementing fiscal policies and incentives to encourage healthy food production and consumption; regulating the marketing of unhealthy goods; improving the labeling of processed food and drink products; and enhancing school food quality while increasing physical activity among schoolchildren [43]. These findings underscore the importance of addressing environmental exposures to mitigate the risk of T2DM in the Hispanic/Latino population through proactive public health interventions.

Turning to the built environment, a study in New York City investigated health-related quality of life (HR-QoL) in low-income Hispanic/Latino neighborhoods, emphasizing residents' perceptions. Factors such as perceived walkability, including trails, sidewalks, aesthetics, and barriers such as high crime and traffic, siglnificantly influence HR-QoL [44]. Positive mental HR-QoL correlated with well-designed neighborhoods, while barriers contributed to negative HR-QoL. Thus, addressing and mitigating negative aspects of the neighborhood environment may be more pivotal for enhancing HR-QoL than adding positive features alone [44].

The influence of the built environment on physical activity and T2DM incidence within the Hispanic/Latino population is substantial. Factors such as traffic safety, well-designed sidewalks, and street amenities play crucial roles in supporting walking for exercise among adults with T2DM [45, 46]. A study focused on Latin American countries highlighted the potential of promoting active transportation, such as cycling, to reduce obesity rates [47]. The built environment impacts physical activity and, consequently, T2DM outcomes and must be addressed when discussing chronic disease prevention and management in the Hispanic/Latino community.

Building Healthy Homes

This recommendation emphasizes the impact of housing disparities on T2DM outcomes among Hispanic/Latino communities, highlighting the need for interventions to address housing instability and secondhand smoke exposure.

NCCC Recommendation 4.9: Addressing Housing Disparities

Ongoing housing disparities for Hispanic/Latino renters may affect T2DM outcomes. A study on renters revealed that Hispanic/Latino households consistently face lower rates of affordable housing than NHW households do, with affordability challenges extending to meeting other basic needs [48]. Low-income minorities are left to face substandard housing conditions, including exposure to mold, moisture, dust mites, and rodents [49]. These findings emphasize the enduring challenges faced by Hispanic/Latino renters in accessing affordable, safe, and stable housing.

Housing instability also elevates the risk of T2DM for veterans, especially Hispanics/Latinos, according to a study linking homelessness to poor glycemic control [50]. Further exacerbating these housing disparities, a study found marked disparities in chronic disease monitoring between Hispanic/Latino and White veterans with diabetes, with White veterans more frequently receiving care outside the VA system [51]. Healthcare providers, federally funded organizations, and employers should consider integrating housing insecurity assessments into their routines and prioritizing social resources for support [52]. Gentrification, another significant housing-related factor, entails the transformation of urban neighborhoods characterized by enhanced infrastructure and an influx of wealthier residents. Although not universally beneficial, this approach holds promise for improving T2DM outcomes in Hispanic/Latino communities. Equitable development strategies, affordable housing, and income support policies can ensure gentrification benefits, particularly for marginalized communities [53].

In multiunit and multifamily housing, Hispanic/Latino residents face involuntary secondhand smoke (SHS) exposure, despite smoke-free regulations [54]. Researchers have proposed associations between smoking and increased insulin resistance [55, 56]. Variations in smoking-related beliefs among Hispanic/Latino individuals, with Cuban Americans having the highest smoking prevalence, necessitate targeted interventions [57]. A New York State study linked a 38.1% smoking prevalence among adults with comorbid T2DM and serious mental illness to higher tobacco retailer density, underscoring the influence of tobacco companies historically targeting minorities [58, 59]. Research urges prioritizing smoking cessation resources in dense areas, especially in rural settings, and policy changes to reduce tobacco retailer density [58].

With the increase in cannabis use, research has suggested a potential protective effect against T2DM, but variations in study methods and sex-specific differences require further investigation [60]. Conversely, the CARDIA study suggested a potential increase in prediabetes risk linked to marijuana use [61]. As the legal landscape evolves, housing policies, especially in shared multiunit housing, may need adjustments to address challenges associated with smoking or cultivating cannabis. Policies should cover individual living units, ensuring comprehensive protection [54, 60].

Conclusions

Our article thoroughly examines the factors driving T2DM disparities in the U.S. Hispanic/Latino populations, including socioeconomic, cultural, and healthcare access issues. These challenges worsen T2DM prevalence and hinder effective strategies. We emphasize the urgent need for enhanced T2DM policy and targeted interventions to comprehensively address these disparities. While the NCCC recommendations offer a foundation, our analysis suggests improvements to better serve Hispanic/Latino communities, focusing on community-centered approaches. We emphasize the importance of tailored community-based interventions, from workplace programs to church initiatives, which have shown promise in improving T2DM-related health outcomes. Aligning federal efforts, like the ONDP, with local initiatives can optimize resources for addressing these disparities.

Moreover, we have delved into the critical role of government action in tackling healthcare barriers faced by Hispanic/Latino communities, including language barriers, transportation issues, and healthcare access disparities. Policy interventions promoting culturally competent care, translation services, and telehealth can bridge these gaps. Addressing social determinants of health, such as food insecurity, environmental exposures, and housing disparities, in mitigating T2DM disparities among Hispanic/Latino populations is vital. By overcoming barriers to SNAP enrollment, promoting healthy food access, addressing environmental hazards, and advocating for safe and affordable housing, policymakers can create environments that support T2DM prevention and management efforts.

Limitations

Our analysis found areas for improvement in each of the eight recommendations; however, it is likely that all NCCC recommendations can be better tailored to community-specific needs, including but not limited to the Hispanic/Latino population. Future research should aim to provide an updated NCCC framework for the Hispanic/Latino population for all recommendations and set timeframes for the implementation of interventions. While efforts were made to include diverse perspectives, our analysis may not fully represent all Hispanic/Latino populations' experiences and account for the diversity of experiences within different Hispanic/Latino communities. Most importantly, the rapidly evolving nature of healthcare policy and community dynamics means that the recommendations provided may require ongoing adaptation to remain effective in addressing T2DM disparities among Hispanic/Latino communities.

In essence, while progress has been made in understanding and addressing T2DM disparities among Hispanic/Latino populations, much work remains. By prioritizing targeted interventions, policy enhancements, and community engagement, we can move closer to achieving health equity and improving outcomes for Hispanic/Latino individuals affected or soon-to-be affected by T2DM. This comprehensive approach is essential for dismantling the factors contributing to T2DM disparities and ensuring healthy lives for all.

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