In Brief

This article explores current discourse regarding the limitations of linear approaches to addressing diabetes prevention and control typically reported in efficacy investigations. The authors discuss the need for health professionals to understand the link between social determinants of health and health outcomes. They define social determinants of health, provide examples, and discuss how these social determinants affect minority health. This information can lead to the adoption of nontraditional strategies that involve the use of nontraditional partners and the identification of opportunities for improving or preventing negative health outcomes in communities affected by inequitable conditions.

Social Determinants of Health in Minority Populations: A Call for Multidisciplinary Approaches to Eliminate Diabetes-Related Health Disparities

The predominant paradigm used in chronic disease prevention and control rests on the traditional and hard-held belief that individuals are solely responsible for adopting and maintaining modifications in lifestyle practices. Clinical trials have historically targeted individual-level risk factors such as BMI and elevated cholesterol, fasting glucose, A1C, triglyceride, and blood pressure levels. These trials demonstrated that, when patients are provided access to highly trained medical staff, tailored medical and educational interventions, and patient-provider follow-up, changes in clinical outcomes (e.g., glycemic control, A1C level, and blood pressure level) are generally positive. Such findings, while impressive, are generated under ideal institutional and financial circumstances that are typically not the reality of the everyday experiences of most patients living with diabetes and the health care settings charged with providing care to them.

Some researchers argue that tightly controlled intervention studies executed in clinical and community-based settings that focus on changing individual behaviors are not easily translatable into practical approaches that can help eliminate diabetes-related health problems. Maintaining and relying solely on a medical-model approach that insists on identifying and primarily examining clinical outcomes is misleading. Furthermore, this narrow, singular approach delays the integration of other schools of thought regarding the role of environmental characteristics such as neighborhood desirability, public policy, zoning regulations, and segregation as powerful root causes of health disparities among vulnerable populations including ethnic minorities.

This article explores recent discourse regarding the limitations of linear approaches to addressing diabetes prevention and control typically reported in efficacy investigations. The authors focus on how a lack of accessibility to healthy foods and easy access to fast foods are forms of social determinants of health that negatively affect disease management. They offer a rationale for the use of public and economic policies to improve such conditions and provide examples of how such policies can be used to intervene on social determinants of health.

During the past 10 years, seminal systematic reviews have been published describing frameworks around which diabetes self-management interventions have been developed, modified, and implemented. Studies contained in these systematic reviews acknowledged significant differences in diabetes self-management behaviors and clinical outcomes between minority and white populations. Researchers note that diabetes continues to exact a tremendous physical, emotional, and
financial burden on minority populations with diabetes.\textsuperscript{9,10,12}

Diabetes in the United States is a serious public health problem that disproportionately affects African Americans, Hispanics, Asians and Pacific Islanders, American Indians, and Alaskan Natives.\textsuperscript{13} By 2050, the Asian population is projected to increase by 212.9%, Hispanics by 187.9%, and African Americans by 71.3% compared to 32.4% growth in the white population.\textsuperscript{14} Diabetes prevalence among these groups is 12.6% in African Americans, 11.8% in Hispanics, and 8.4% in Asians compared to 7.1% in whites.\textsuperscript{15}

Reasons postulated to explain this disproportionate burden of diabetes include genetic predisposition, family history, improper diet, limited physical activity, socioeconomic position, sex, and access to overall high-quality health care.\textsuperscript{4–7} Furthermore, the role of the environment, both physical (e.g., restaurants serving healthy foods, walking trails, and safe neighborhoods) and social (e.g., families, workplaces, and social support), contributes to cultural norms and the views and perspectives of individuals.

Individuals diagnosed with diabetes are therefore educated about the behavioral modification practices they must undertake to improve their diabetes self-care.\textsuperscript{4,10} The ultimate goal is to improve and sustain clinical outcomes such as A1C, cholesterol, and blood pressure levels.\textsuperscript{4,10} Still, despite the best intentions, diabetes-self-management education studies report only short-term improvements in clinical outcomes.\textsuperscript{10} This raises the question: If individuals are exposed to quality diabetes education, management, and treatment, why do substantially poorer health outcomes for vulnerable populations still exist?

One reason is that such an approach, although not intentionally, facilitates a blame-the-victim mentality holding that, after exposure to educational interventions, individuals should voluntarily choose to comply with nutrition and physical activity recommendations.\textsuperscript{3} According to Raphael et al.,\textsuperscript{16} “this dominant ‘health behavior’ paradigm takes little account of the increasing literature concerning the importance of the social determinants of health in population health in general and the incidence and management of diseases such as diabetes.”

Fortunately, the field of public health has recently evolved to begin discussing how environmental and social conditions have either protective or compromising effects on individuals’ health outcomes.\textsuperscript{17,18} This has helped health professionals recognize that social and environmental risk factors serve as significant predictors of adverse health outcomes for vulnerable populations, just as do traditionally identified biomedicai risk factors.\textsuperscript{17} Often referred to as “social determinants of health,” these social and environmental risk factors play a crucial role in shaping the field of public health.\textsuperscript{18} Social determinants have been defined as factors in the social environment (e.g., socioeconomic status, housing, transportation, availability and accessibility of health care resources, and social support) that either positively or negatively affect the health of individuals and communities.\textsuperscript{3}

Understanding the link between social determinants of health and diabetes can lead to the identification of nontraditional strategies by using nontraditional partners and identifying opportunities for improving or preventing negative health outcomes in communities affected by the iniquitous conditions that create them. \textit{Healthy People 2020} highlighted the importance of addressing the social determinants of health by including as one of the four overarching goals for the decade, “Create social and physical environments that promote good health for all.”\textsuperscript{19}

\textbf{Disease Management and Social Determinants of Health}

According to Glasgow et al.,\textsuperscript{20} “It should not be surprising when the results of an intervention are efficacious under a highly specific set of circumstances but fail to replicate across a wide variety of settings, conditions, and intervention agents in effectiveness research.” Glasgow et al.\textsuperscript{20} further state, “We need to embrace and study the complexity of the world, rather than attempting to ignore or reduce it by studying only isolated and often unrepresentative situations. We must move forward despite a current dependency on linear approaches and research methodologies to explain complex manifestations of population-based disease management.” This is particularly true for vulnerable populations in the United States for which diabetes has had a more significant cost financially and emotionally.\textsuperscript{11,15,16}

This understanding would also help to identify radical public health strategies that recognize these determinants as opposed to ignoring them.\textsuperscript{21} This is particularly important because unhealthy behavior and lifestyle alone do not solely explain poor health outcomes among lower socioeconomic groups.\textsuperscript{24} Even if behavior is held constant, people of lower socioeconomic status are more likely to die prematurely than are people of higher socioeconomic status.\textsuperscript{22}

Several organizational, economic, and social determinants, although less researched, have been postulated to influence the pathways through which chronic diseases such as diabetes are produced and managed. Examples include health care organizational characteristics (e.g., health care provider practices, provision and degree of appropriate diabetes education, use of patient-reminder systems, health care provider training, and cultural competencies of medical staff),\textsuperscript{23} diabetes-related health care costs,\textsuperscript{24} family involvement,\textsuperscript{25} social support,\textsuperscript{26} and other factors such as housing, racism, availability and accessibility of healthy foods, and transportation.\textsuperscript{27}

Intuitively, these factors would appear to be obvious determinants of health. However, they are seldom studied in any rigorous manner given that these factors operate at the level of the individual, family, community, and society and are difficult to measure in a scientifically defensible manner. Even when interventions are conceptualized at multiple levels, the measurement techniques that are employed often rely only on individual-level outcomes for evaluation because of a lack of familiarity with techniques at other levels of analysis.\textsuperscript{28}

Although difficult, emerging work in social epidemiology, for example, offers hope in applying special statistical techniques in multilevel analyses that can, where possible, establish links between health outcomes among individuals who share similar economic, social, and geographical characteristics.\textsuperscript{28} For example, residents in poor communities tend to experience higher crime rates, substandard housing, minimal or no medical services, limited recreational facilities, and a lack of local stores offering healthier foods.\textsuperscript{17,29–31}
Accessibility to healthy foods

Health is strongly influenced by the conditions of the environment in minority neighborhoods, where opportunities for good nutrition are often limited. The relationship between good nutrition and the prevention of chronic diseases has been well established. Essential to good nutrition is having access to healthy foods in the community in which you live. The fair and equitable distribution of food is a basic human right. However, not all communities have the economic clout or sense of empowerment to advocate for this entitlement.

Residents of minority communities are more likely to be severely limited in their access to quality fruits, vegetables, and other healthy food options because of cost, lack of transportation, and lack of availability. Several studies argue that the placement of food service outlets is strongly associated with the wealth and racial distribution of the neighborhood, with more than eight times as many individuals from minority populations living in low-income neighborhoods than in wealthier areas. For example, African-American urban neighborhoods are reported to have only 41% of the chain supermarkets found in comparable white neighborhoods. Even when minority neighborhoods are not considered to be low-income, the availability of chain supermarkets and healthy food options is still significantly less. In addition to the significant difference in the quantity of food available at large chain supermarkets compared to non-chain supermarkets and smaller grocery stores, residents of urban neighborhoods are likely to pay 3–37% more than those in suburban areas for the same food purchases. Barriers to food security are created by the continuing practice of redlining (discriminatory pricing) the costs of products and services in low-income neighborhoods.

Regardless of income or housing cost, living in a predominately minority neighborhood increases the likelihood of having poor access to healthy food choices. As a result, minority communities are left primarily with smaller grocery and convenience stores or no grocery stores at all. Grocery stores with restricted shopping options for residents tend to have fewer fresh fruits and vegetables, less healthy cuts of meat, and less fish and chicken and to offer mostly processed foods that are high in fat, salt, and calories.

Debate continues about whether grocery stores located in minority neighborhoods are less likely to stock healthy food options because the community is viewed as being less likely to purchase them, or whether the community residents do not purchase healthy food options because of their limited access to them. Hence, it may be that the availability and amount of healthier food options supplied by storeowners is limited to what members of vulnerable populations perceive to be culturally appropriate food selections.

Contributing further to the lack of accessible healthy foods is the availability of resources such as private or public transportation needed to obtain them. In minority communities, limited or lacking transportation hinders the flexibility of residents to travel outside of their neighborhood to seek healthy foods. Neighborhoods with healthy food options are also more likely to be associated with other healthy living conditions (e.g., better built-environment resources and health-protective factors (e.g., higher income, higher education, and lower BMI) and are more likely to be largely white.

Easy access to fast foods

Another issue related to the lack of access to healthy food choices in vulnerable populations is that of an overabundance of fast-food restaurants, as opposed to sit-down restaurants that usually offer more healthful food choices. The increased density of fast-food restaurants in predominantly minority communities provides convenient access to inexpensive food that have a low nutrient density and are high in calories and fat. A study exploring the environmental factors contributing to increases in obesity in low-income, African-American populations of Orleans Parish, La., offers a good example. Block et al. found that neighborhoods in which the population was at least 80% African American had 2.4 fast-food establishments per square mile compared to 1.5 in neighborhoods in which the African-American population was < 20%.

Given the higher cost of fresh produce, poorer populations are already at a disadvantage in adhering to a healthy eating plan. The ability to adhere to recommended food guidelines becomes even more crucial for people who are at risk for or living with a chronic disease such as diabetes, for which food intake and nutrition habits play a significant role in optimal disease management.

Public and Economic Policies to Intervene on Social Determinants of Health

Policy experts maintain that public and economic policies are needed to intervene on the effects of socioeconomic inequalities experienced by disparate populations in the United States. Ruger suggests the integrative use of what she describes as horizontal and vertical public and economic policies to intervene on these effects. Horizontal public policies promote the use comprehensive disease-specific interventions to improve health. In this instance, interventions targeted at improving patient and provider interactions (e.g., communication, shared decision-making, and delivery of diabetes care preventive services) and psychological functioning (e.g., group psychotherapy and family and social support) and promising environmental support interventions (e.g., availability and accessibility of safe places to exercise, affordable transportation, and healthy foods) are used simultaneously whenever possible.

One example of an environmental support intervention would be to educate community residents about the importance of food security to their community. In addition, environmental support interventions are needed to help empowered community members to advocate for how the land of their community is zoned and developed around them. Advocating for farmers’ markets in the neighborhood and increasing their use of farmers markets to access locally grown fruits and vegetables is one strategy to help neighborhoods with minimal sources of healthy food options. This strategy could increase the likelihood of having a sustainable healthy food system.

Vertical public policies, according to Ruger, target improved economic, cultural, and social conditions that...
include employment and political and civic opportunities. At present, traditional partnerships have included health care providers, universities, and health care, community, professional, media, and faith-based organizations. Reported results of these partnerships include distributing educational materials, conducting localized health events, and distributing media (e.g., public service announcements).41

The use of vertical public policies takes these partnerships one step further by encouraging linkages with new or reinvented partnerships that are seldom pursued. For example, agencies whose primary focus is on education, recreation, transportation, and housing can also play a role in the identification of social, economic, and public policies that may have beneficial improvements on health. Institutional policies, for example, could help eliminate unhealthy snacks in public facilities. Community or municipal-driven public policies could respond to challenges in the availability of healthy food by enhancing transportation systems to improve access and creating building zones that prevent building fast-food restaurants.

Conclusion
Certainly, diabetes in vulnerable populations is highly influenced by both genetics and weight status, which is the result of limited access to healthy foods, poor food choices, and lack of physical activity. However, this article asserts that the characteristics of minority neighborhoods provide serious points of consideration as to how and why minority populations continue to experience high rates of diabetes-related morbidity.

Health professionals must not only have interdisciplinary discussions, but also promote more interdisciplinary interventions that bring together agencies and organizations responsible for schools, housing, safety, urban renewal, transportation, employment, and land use to develop health impact assessments that yield more creative and innovative solutions. Specifically, health impact assessments will provide nonhealth agencies and organizations with a clear picture of how their policies and practices either directly or indirectly contribute to the perpetual decline of minority and other vulnerable populations.48

Environmental conditions substantially impede opportunities to engage in appropriate lifestyle behaviors. Furthermore, relying primarily on the use of lifestyle interventions (even those proven efficacious or effective) will not help individuals working in minority and vulnerable communities to embrace the previously mentioned complexity noted by Glasgow et al.11 Acknowledging and embracing this complexity will allow for the identification of opportunities to intervene at multiple levels. However, doing so will require innovation, progressive thinking, courage, and a desire to participate in a needed paradigm shift.

Health professionals are encouraged to begin a conversation both within and outside the profession with the goal of better understanding the powerful environmental forces that are typically outside of their control. It is important to explore a multilevel approach to improving health outcomes among vulnerable populations that includes social position (e.g., class, age, sex, and race), environmental context or place (e.g., housing conditions, availability of safe places to exercise, access to quality health care, sidewalks, and access to affordable foods), lifestyle (e.g., physical activity, nutrition, and smoking), and biomedical factors (e.g., A1C, cholesterol, blood pressure, and blood glucose levels). Exploring health from a multilevel perspective underscores the need for a population-based, rather than individual, approach.

Health disparities related to diabetes will continue to occur years ahead of the incidence of type 2 diabetes approach.12,13 Also, diabetes continues to account for a significant portion of cardiovascular disease, stroke, and other chronic conditions.14,15 Diseases of the heart and blood vessels account for about 68% of deaths in the United States, and people with diabetes are at increased risk of dying from heart disease or stroke.16,17

Health disparities related to diabetes continue to occur years ahead of the incidence of type 2 diabetes.18,19 Diabetes is a chronic disease that affects how the body uses food (glucose). It occurs when the pancreas does not make enough insulin, when the body does not use insulin well, or when there is too much insulin in the blood.20

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