

AHA SCIENTIFIC STATEMENT

Socioeconomic and Structural Barriers to Addressing Obesity in Communities: A Scientific Statement From the American Heart Association

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ABSTRACT: The obesity epidemic continues largely unabated, affecting more than one-third of the US population and disproportionately burdening individuals from socioeconomically disadvantaged populations. Numerous factors contribute to the high prevalence of obesity, including socioeconomic and structural barriers impeding primordial and primary prevention efforts. Despite broad recognition that social determinants of health are key drivers of obesity, the importance of socioeconomic and structural factors as contemporary barriers to individual-, community-, and population-level obesity prevention and intervention efforts remains underappreciated. This scientific statement highlights multilevel barriers to obesity prevention and management, with an emphasis on social determinants of health, societal culture, and shared biases that may interfere with the success of healthy weight management programs. The assessment includes a comprehensive review of policy and community-level strategies used to address the obesity epidemic and identifies key areas for future research.

Key Words: AHA Scientific Statements ■ bias ■ obesity ■ social determinants of health ■ socioeconomic disparities in health ■ socioeconomic factors ■ weight stigma

Obesity is a chronic condition that affects people of all ages and from all socioeconomic backgrounds. The *Lancet Diabetes and Endocrinology* Commission defines obesity as “a condition characterized by excess adiposity, with or without abnormal distribution or function of adipose tissue.”¹ Clinical and preclinical obesity are further categorized by the presence or absence, respectively, of objective features associated with tissue or end-organ dysfunction or impairment in performing activities of daily living. In the United States, obesity rates have steadily increased; current estimates indicate that up to 40% of adults and 20% of children are affected.^{2,3} The cumulative financial cost in the United States—>\$1.4 trillion annually—is compounded in underresourced communities, which are disproportionately affected by obesity-related complications and limited access to effective treatments.⁴

The causes of obesity are multifactorial. Obesity has strong genetic heritability, with >100 risk alleles identified in genome-wide association studies.⁵ However, genetic predisposition alone is not the primary driver for high obesity rates.⁴ Causal pathways for obesity are multilevel and multifaceted. Societal and structural factors that shape policies, access to health care, socioeconomic status, and health literacy act through downstream mediators and influence individual-level stress and health behaviors (eg, diet, physical activity).^{4,6} Disparities in obesity prevalence and care delivery are rooted in these structural and socioeconomic factors (Figure). Since the 1960s, scholars have advocated and enacted public health efforts to address endemic bias and disparities within health care and health research. In 2020, the American Heart Association recognized deep-rooted biases as fundamental causes of health disparities and

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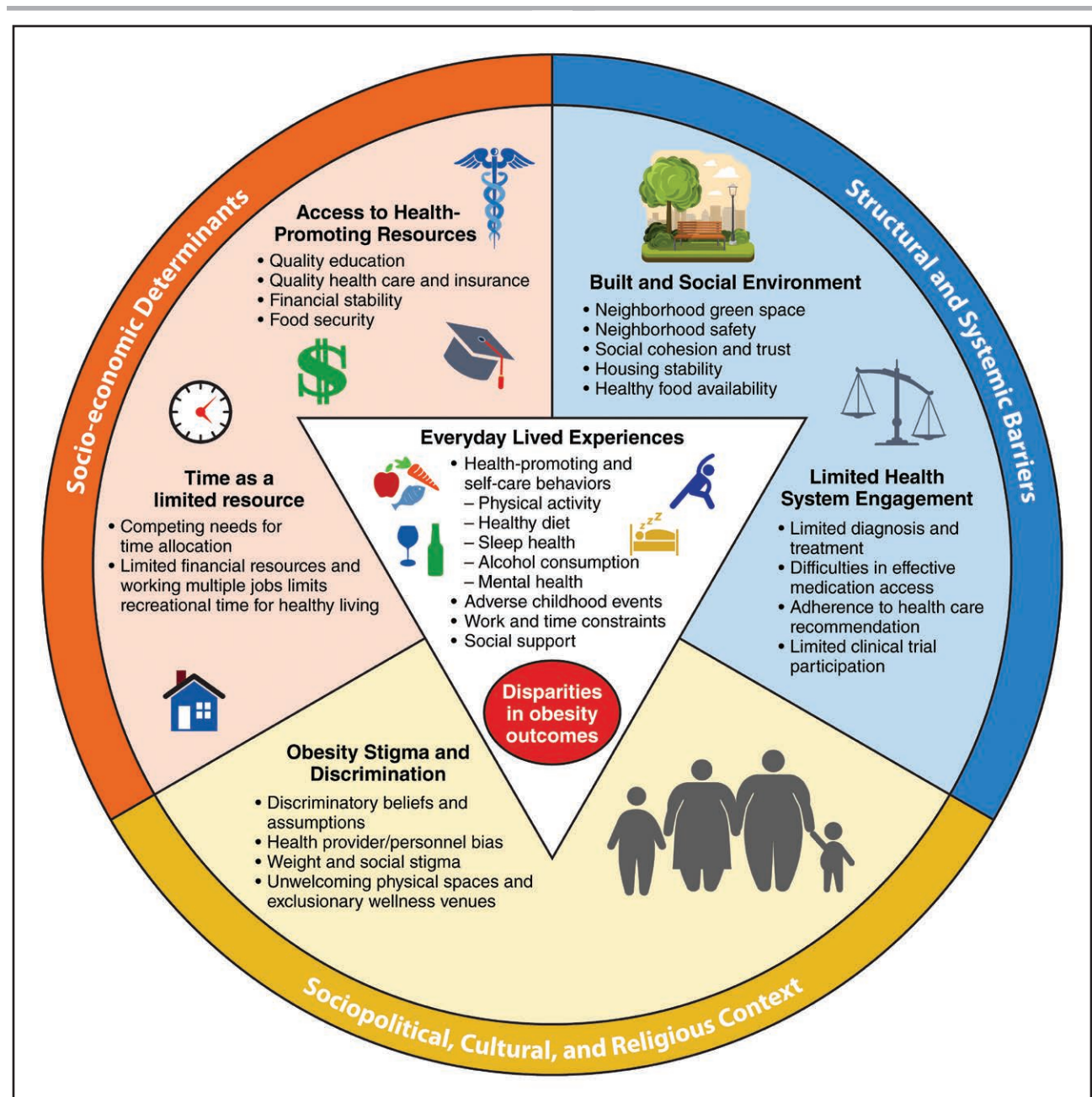


Figure. Structural, sociopolitical, and socioeconomic factors in obesity prevalence and care delivery.

reaffirmed the organization's commitment to eliminating disparities, promoting health for all, and continuing research on fair policies.⁷ The impact of structural bias in health care and health systems research and policy recommendations for addressing the effects on cardiovascular disease were recently published.⁸ The current scientific statement builds upon American Heart Association's call to action for eliminating health disparities in obesity prevention and care by noting the influence of structural and socioeconomic disadvantages on weight trajectories and patterns that promote and sustain obesity across the life course. This scientific statement summarizes barriers perpetuating obesity disparities, identifies strategies to mitigate them across the life span,

highlights knowledge gaps, and proposes holistic cross-cutting targets for addressing socioeconomic and structural barriers to obesity prevention and management in children and adults.

STRUCTURAL AND SOCIOECONOMIC FACTORS AND RISING PREVALENCE OF OBESITY

Strong epidemiologic evidence links biases and socioeconomic factors with obesity across the life span.⁶ Obesity disproportionately affects populations experiencing socioeconomic hardship, limited geographic access to

resources, incarceration, or other structural barriers. Risk for and prevalence rates of obesity in the United States are highest among non-Hispanic Black children and adults,⁹ children from rural areas and low-income families,^{10,11} and adults with the lowest educational attainment.¹² In the United States, ≈45% of individuals with a high school diploma or less have obesity, compared with 34% of adults with advanced degrees,¹² and children whose parents did not complete high school had the highest rates of weight gain throughout adolescence and early adulthood.¹³ The disparate health effects of obesity are also socially patterned and perpetuated through insidious structural determinants of health in underresourced populations. For example, a history of incarceration is associated with high obesity rates for all individuals, but non-Hispanic Black men have the highest rates in the United States.¹⁴ This disproportionate impact of mass incarceration in non-Hispanic Black men is a direct measure of entrenched bias that is partially explained by underlying structural factors, including lower educational attainment, neighborhood factors, and socioeconomic disadvantage.¹⁴ Altogether, these data support intersectional effects of socioeconomic and structural barriers driving the differential distribution of obesity across the life span.^{4,6} The cyclic relationship across multilevel domains directly contributes to intergenerational transmission of obesity and the current pediatric obesity epidemic worldwide.¹⁵

MULTILEVEL BARRIERS TO OBESITY PREVENTION AND TREATMENT

Socioecologic factors across societal, community, and individual levels contribute to the development and propagation of obesity within populations. These societal and structural influences play a prominent role in shaping individual everyday lived experiences through various mediators (Figure). Downstream, cumulative stress and psychological factors differentially predispose people from underresourced and disenfranchised groups to obesity and its comorbidities. Implementation of obesity prevention and treatment strategies should begin upstream to target the intersecting societal and structural causal obesogenic pathways. Healthy weight-promoting strategies have integrated and overlapping elements occurring along a continuum.¹⁶ However, contemporary obesity programs often prioritize individual and community-level behaviors and factors and have not successfully addressed the persistence of obesity as a large-scale health problem in the United States.¹⁶ Weight management paradigms that target individual-level behaviors, such as promoting healthy eating, regular physical activity, high-quality sleep, and mental health and well-being practices—with or without prescription pharmacologic agents—fail to address overlying societal barriers, including weight-based stigma, adverse childhood events, economic hardship, housing and food insecurity, crime, and limited neighborhood green

spaces.¹⁷ If systemic barriers persist, they could continue to jeopardize person-centered intensive antiobesity interventions, contribute to weight regain, and limit the sustainability of individual-level focused programs. In the following, we discuss some of the major structural barriers that impede obesity prevention and treatment efforts.

Obesity and Weight Stigma

Misinformation assumptions about the pathogenesis of obesity result in stigmatization and discriminatory attitudes that impede obesity prevention and management efforts.¹⁸ Within this context, obesity is perceived as a matter of personal responsibility, resulting from modifiable behaviors that are viewed as reflecting poor self-control or lifestyle choices. Between 20% and 90% of individuals—depending on sex and body mass index—exhibit misinformation beliefs about obesity.¹⁹ Beliefs may permeate interpersonal exchanges, access to prevention programs, treatment resources, clinical practice, and policies.¹ Cultural perceptions and beliefs about the relationship between weight status and health differ across populations. In the United States, compared with White patients, Black individuals are up to twice as likely to misperceive their weight, and Hispanic individuals may be up to 70% more likely to misperceive their weight.²⁰

Internalization of weight or obesity stigma is an upstream socioecologic factor with broad societal consequences; there is a long history of obesity stigma impeding effective public health efforts in obesity prevention and management.²¹ Stigmatization is cyclical and pervasive, especially among socially vulnerable groups. Downstream effects of weight stigmatization may directly contribute to psychologic harm, health care mistreatment, adverse employment outcomes, and inadequate accommodation in public spaces (Figure 1).²² Furthermore, obesity stigma begets stress-activating neuroendocrine and behavioral pathways that promote increased adiposity and impede obesity prevention and treatment efforts.²³ Stigma and bias are strongly associated with poor mental health, adverse physical health, unhealthy eating behaviors, and reduced ability to achieve and maintain a healthy weight.¹⁸

Limited Health System Engagement

The health care setting has not served as a refuge or an effectual milieu for addressing obesity.¹⁶ Downstream consequences of social structural factors preclude engagement and enrollment in programs. Health care professional implicit bias limits obesity diagnosis and care; groups that bear the greatest burden of obesity have also been historically excluded and mistreated in medical research.²⁴ Moreover, people who experience weight stigma are also more likely to avoid seeking care and health care interactions.^{18,21} Within the health care

infrastructure, unaccommodating spaces and equipment create physical and structural barriers to accessing health care and health-promoting interventions among people with or at risk for obesity.¹⁹

Additional barriers to obtaining care for obesity and related conditions include time constraints, economic hardship, and public or private insurance coverage, as recently summarized in an American Heart Association scientific statement on obesity science in clinical practice.¹⁶ Socioeconomic and insurance status promote disparities in obesity diagnosis and care, although these structural factors alone do not fully explain the reduced likelihood of successful obesity interventions.²⁵ Access to effective treatment programs, health care resource engagement, sufficient work and time allowances, and social support are also imperative for successful obesity treatment programs. These commodities are limited in underresourced neighborhoods and social environments, and are affected by prevailing government and institutional policies.²⁶

Built and Social Environment

The built environment contributes to obesity disparities by sorting historically segregated groups into neighborhoods and systematically reducing neighborhood economic vitality. Redlining, a practice formalized by the US federal government in the 1930s, created neighborhoods based on racialized loan risk assessments that made it more difficult for Black individuals to obtain home loans and less appealing for businesses to open.²⁷ Segregation of other racial groups and ethnic groups (eg, Hispanic/Latinx, Asian, Pacific Island) into poorly resourced neighborhoods has also occurred through similar but less formalized measures.²⁸ Although such housing practices are now illegal, adverse effects remain. Neighborhoods with higher proportions of non-White residents are often systematically underresourced and have limited infrastructure promoting healthy environments. Given that where one lives affects educational and economic opportunities, these restricted residential options have broad health implications.

The structural and social processes that shape where people live, and the resources that are readily accessible to them, present several barriers to obesity prevention and treatment—most notably, access to safe spaces for physical activity, affordable healthy food options, and nonphysical lifestyle factors, such as stress level and sleep quality. Traffic patterns, noise, and light pollution disrupt circadian rhythms, increase toxic stress, and affect sleep quality and quantity, increasing obesity risk.²⁹ Furthermore, balancing health-promoting practices in safe neighborhood spaces is essential for maintaining healthy practices. An umbrella review of systematic reviews found that higher neighborhood walkability and

greenness were features of the built environment consistently associated with lower obesity rates.³⁰ Even among more affluent individuals living in underresourced neighborhoods, access to safe physical activity spaces may be restricted or inconsistent, underscoring the relevance of neighborhood safety to the success of obesity care programs.

The association of obesity with inconsistent access to nutritious foods, both for individuals and across communities, is complex and nuanced. Although nutrition insecurity—defined as limited access to high-quality, desirable, nutritious foods—is a barrier to healthy eating, few trials are available on this topic. Findings from observational studies relating the neighborhood food environment with diet and obesity are mixed.³¹ Multiple sociocultural factors—including exposure to marketing and food infrastructure, unhealthy food and beverage taxes, healthy food subsidies, and calorie posting on restaurant menus—may contribute to healthy food consumption, and this is an area of active research.³² Programs increasing access to healthy foods promote fruit and vegetable consumption, but the effects of these programs on obesity rates are inconsistent.^{32,33} In isolation, changes in healthy food access and consumption may be insufficient to modify downstream changes in obesity rates. Seemingly opposing findings from studies of food insecurity and obesity outcomes may stem from differences in intervention type, implementation evaluation rigor, interaction with other contextual factors, and underlying differences in which groups benefit the most.^{32,33} Therefore, the overall effects of healthy food interventions may be constrained by competing environmental barriers that are outside an individual's direct control. Food access interventions may be limited in geographic area (eg, a single remote neighborhood), access time (eg, limited grocery pick-up times), target population (eg, food only available for seniors or during pregnancy), affordability of healthy foods, limited time to prepare meals, and the short duration of outcome evaluation (eg, months versus years).

Consideration of Time as an Understudied Resource

Beyond monetary and geographic access, time is an often-overlooked aspect of neighborhood disadvantage that is differentially afforded to people by socioeconomic status.³⁴ Depending on geographic location, limited transportation options may restrict ready access to healthy and fresh produce and availability of safe physical activity spaces. Increased time to access resources, because of physical distance or time to reach resources, disincentivizes access by increasing time burden.³⁵ As a zero-sum resource, time spent on non-negotiable activities, including gaining access to tangible resources, will be prioritized over activities with less quantifiable or longer-term benefits. Because

time is finite, time spent on health maintenance must be deducted from time needed to work and ensure financial stability. In underresourced populations with fixed monetary and time resources, work and caregiver activities are prioritized to maintain financial independence and households, respectively. Therefore, time spent on health- and weight-promoting activities (eg, leisure time physical activity, preparing healthy meals at home, achieving optimal sleep and rest, addressing mental well-being) necessarily take second place to activities preventing employment loss, becoming unhoused, food insecurity, or losing access to medical care. Social patterning—that is, differential time allocation in certain groups by socioeconomic status, sex, culture, religion, or community cohesion—promulgates disparate obesity rates.³⁶ People with access to strong social networks are able to leverage their support systems to maximize time and prioritize diet and lifestyle changes. In turn, engagement with community and family alliances offers benefits known to improve health, such as peer accountability, resiliency, mutual aid, and shared resources.³⁴ However, among at-risk groups with inconsistent access to social networks, there is limited time for self-care. Therefore, without addressing time as a resource, individual-level interventions are not as successful as holistic approaches.³⁷

ADDRESSING STRUCTURAL AND SOCIOECONOMIC BARRIERS

Preventing and mitigating obesity-related health disparities requires multipronged approaches across socioecologic domains to address the structural and socioeconomic factors and community and individual behaviors described previously. A summary of potential mitigating strategies for obesity prevention and treatment facilitation is outlined in the Table. In the following, we discuss specific examples and evaluate efforts to address multiple domains.

Social Policies

Social policies are important structural determinants of health that influence access to health-promoting resources, and therefore, obesity risk. Potential targets for reducing disparities related to obesity include public policies to mitigate disparities in housing, transportation, financial, and education access and attainment (Table). Social programs may directly influence behaviors and access to resources that may either mitigate or exacerbate health disparities, depending on their design and implementation. Because various programs have been associated with reductions in food insecurity and may help mitigate obesity in certain populations, it is important to consider the potential effect on obesity

Table. Potential Targets and Benefits of Social Policies and Interventions for Preventing and Treating Obesity

Policies/ interventions	Proposed benefits
Social policies	
Housing	Improve access to stable and affordable living conditions
Labor	Regulate minimum wage laws, paid leave, and work-hour regulations
Education	Ensure access to quality healthy lifestyle and behavior education
Economic	Address income inequality through financial incentives and income tax credits
Context-specific multisector collaborations and community-based interventions	
Real estate	Use local housing authority initiatives to curtail housing insecurity and homelessness
Financial services	Establish partnerships among community development institutions, small business programs, and governmental organizations to incentivize community wealth and local programs
Education	Provide educational programs (eg, in preschools, K–12 schools, job training programs, colleges, universities) on healthy lifestyle and behaviors
Transportation	Offer safe, accessible, and affordable public transportation through the local transportation authority, and partner with insurance providers to incentivize transportation to and from wellness activities and venues
Justice	Institute uniform justice and fair practice training for local law enforcement and juvenile systems
Technology	Use devices and technology to increase access to health-promoting activities; support efficiency with appropriate tools; and enable tailoring through remote service delivery and workflow automation to implement prevention, care, and education recommendations
Faith-based and cultural programs	Establish partnerships between faith-based or cultural programs and health and governmental agencies to support access to and education on healthy lifestyle, behaviors, and resources
Community	Convene partnerships and coalitions with industry partners to support programs in the community, create and provide feedback through community advisory councils, and establish bidirectional systems promoting exchange between community leaders and individuals
Health care professional leadership	
Clinician	Promote a multidisciplinary team including pharmacists, physicians, dietitians, physical and occupational therapists, nurses, social workers, and community health liaisons
Education	Create education and training workshops on structural and socioeconomic barriers that propagate obesity-related disparities
Community resources	Use technology and systems-based practice to connect patients with community resources
Screening and diagnosis	Seek to understand the patient's perception of obesity status and enact a systems- and evidence-based practice for obesity screening and treatment
Management	Make obesity medications available for all patients and provide resources and interventions that consider and target structural barriers to healthy lifestyle behaviors and use of obesity medications

and health disparities when contemplating legislative changes. Recognizing social policies, including food assistance, income support, housing, and labor protections, as structural health interventions is essential for designing effective, equitable obesity prevention strategies. The American Heart Association recently published policy recommendations to promote built environments that support active lifestyles.³⁸ Encouraging walkable environments and expanding access to public transit can foster healthier communities by making physical activity part of daily life.³⁸ In addition, policies targeting income inequality and obesity have yielded positive results from natural experiments. The Earned Income Tax Credit, a refundable tax credit aimed at low-income working families, decreased obesity rates while reducing stress and financial strain.^{39,40}

Large-scale government and nonprofit subsidy programs to increase healthy food access in the United States are associated with mixed outcomes. The use of WIC (Special Supplemental Nutrition Program for Women, Infants and Children) led to increased fruit and vegetable consumption, with modest reductions in national obesity rates among children 2 to 4 years of age.^{41–43} However, reductions in severe obesity rates were nonuniform and varied by region, indicating that multiple unmeasured factors contributed to these trends.⁴⁴ Likewise, SNAP (Supplemental Nutrition Assistance Program), which provides financial support to low-income individuals and families to help them purchase food, reduced the probability of having obesity.⁴⁵ However, long-term effects on obesity rates should be considered in the context of the additional barriers faced by recipients, variations in program implementation, and variable funding mechanisms.^{46,47} CACFP (Child and Adult Care Food Program), a federally funded initiative, supports early childhood nutrition and improved diet quality, with little to no change in obesity rates.⁴⁶ Policies aimed at changing the built environment, wages, or adult-directed educational policies also have not dramatically changed obesity rates in youth or adults.⁴⁸ Effective programmatic outreach is challenging; program implementation depends on enrolling all eligible individuals.⁴⁹ Engagement may be hindered by limited programmatic awareness and knowledge, poor motivation, environmental and administrative burdens to participation, transportation barriers (especially for people living in rural areas), and fear of weight stigma.⁵⁰ Therefore, the most effective strategies to support widespread reductions in clinical obesity rates are still being determined, and likely differ by culture and population. To fully understand the pathways and targets for obesity prevention and treatment, longitudinal and mechanistic trials that account for a range of complex factors, social policies, and holistic approaches to promote healthy eating lifestyles are needed.

The range of policy targets is also undetermined and challenging given the scope, complexity, and heterogeneity of community resources. Whether targeted activities

(versus universal policies) should be promoted is unclear. Targeted policies focused on inequities in certain populations have yielded mixed results for mitigating obesity rates. Outcomes related to cross-sectional observational studies of singular exposures or policy interventions (eg, supermarket location) with short-term assessments of obesity rates have shown substantial heterogeneity. These types of studies fail to capture obesity-related outcomes that may take years or decades to manifest. Consistent, standardized long-term outcome evaluations are necessary to monitor rates of enforcement, compliance, and the full impact of obesity-related interventions. Moreover, the cost of healthy foods within a supermarket may be a more salient predictor of consumption than the more commonly measured and evaluated exposure (ie, availability of a supermarket).

Universal policies recognizing obesity and health behaviors within a broad social context may be more desirable among some communities, but evidence-based data are unavailable. The ideal combination of strategies for mitigating the effects of socioeconomic and structural factors remains unclear. Operationalizing the most effective neighborhood resources for reducing obesity in disparate populations is a major challenge to translating small-scale studies into effective neighborhood- and multilevel interventions. Fair policies and holistic interventions are needed to address the differential access to health-promoting resources across neighborhoods.

Context-Specific Multisector Collaborations and Community-Based Interventions

The most successful programs are culturally and socially informed, with broad engagement within the population. Effective community-based interventions are multisector collaborations that support implementation and buttress sustainable environmental programs for families and individuals (Table). Programs with the highest success rates preferentially target caregivers and families within schools or childcare settings. For example, the Safe Routes to School initiative aimed to increase physical activity among children and improved neighborhood walkability. This initiative improved infrastructure and safety education, particularly in underresourced communities, leading to an increase in walking and biking—behaviors that support cardiometabolic health—although the intervention did not alter obesity rates over the short term.⁵¹ The Shaping Healthy Choices Program implemented nutrition-centric structural and resource interventions (integrating school gardens, nutrition education, and school menu options) to improve physical, educational, and cultural access to nutritious food.⁵² The program increased vegetable intake and nutrition knowledge, and reduced student weight metrics, showcasing the effectiveness of structural changes in school environments. Outside of the

school environment, the Healthy Caregivers–Healthy Children study implemented a parent-focused nutrition curriculum in childcare centers within low-income communities that resulted in stabilization in obesity rates of preschool children over 2 years.⁵³ Other studies—such as the Healthy Families Study, which targeted mother–daughter pairs in public housing, providing nutritional education and physical activity support that increased fruit and vegetable consumption—did not change obesity rates in the short term.⁵¹

Healthy weight practices and interventions that acknowledge time as a resource and leverage social connections are the most sustainable.⁵⁴ Under this umbrella, group-level interventions maximize time for healthy diet and lifestyle practices through colocation of resources and increasing access using local transportation initiatives and technologies supporting care delivery and workflow automation (Table). Many school and workplace wellness programs have focused primarily on access to healthy foods and food choices; increasing acknowledgement of the role of time in health by dedicating time to physical activity (through regular activity breaks, embedding physical activity in classroom or work activities, or allowing students or employees flexibility to use time on the clock for wellness endeavors, such as physical activity and stress reduction) has expanded these efforts.³⁴ Allowing individuals to derive multiple benefits (eg, social support and physical activity, health meals and service) from a single use of their time could equitably address disparities in time as a resource and social determinant of health.³⁴

Health Care Professional Leadership

Clinicians have a crucial role in addressing the structural and socioeconomic barriers to obesity by facilitating referrals to community resources and providing goal-directed individualized obesity care.⁵⁵ Clinician training in structural competency (ie, understanding how structural institutions, implicit bias, and social determinants influence health and disease) is essential for identifying and addressing these barriers in clinical practice. As the leader of the medical home, the clinician directs and monitors interventions, ensuring that individuals have access to culturally and linguistically adapted programs.⁵⁶ Referral to community-supported, including Internet-based, programs has proven efficacy. In Hispanic women attending WIC clinics, an Internet-based weight loss intervention significantly decreased weight over 12 months when added to WIC intervention.⁵⁷

Clinician leadership also shapes culturally effective programming and shared decision-making to facilitate goal setting. By fostering open communication and understanding patients' preferences, clinicians create culturally sensitive approaches to obesity care that are more likely to be sustainable and effective for improving health.⁵⁵

Clinicians are poised to mitigate socioeconomic disparities by acknowledging cultural differences in weight perception, systematically screening for social determinants of health, and offering resources. Understanding the effects of systems-based and quality improvement initiatives is imperative for ensuring holistic care. For example, a large population-based study reported higher prescription rates of obesogenic (weight-promoting) medications for individuals with obesity who are in lower socioeconomic status brackets.⁵⁸ This analysis reflects prescribing practices and differential medication access based on medication insurance coverage rates across regions. Increasing awareness and recruitment of all health care professionals to identify at-risk individuals and administer targeted referrals and resources to overcome the structural barriers promoting obesity could dramatically augment obesity prevention and management programs.⁵⁹

The advent of single and dual incretin analogues—the newest class of obesity medications—has greatly improved obesity treatment, facilitating substantial weight loss and improved health. GLP-1 (glucagon-like peptide-1) receptor agonists and incretin therapies complement diet and lifestyle approaches, cementing their role in multilevel approaches to weight management. However, their integration into community-based interventions is stymied by limited access, high costs, low insurance coverage, and structural factors. GLP-1 use and prescriptions were found to be significantly lower among non-White individuals and underserved groups.⁶⁰ Insurance coverage for incretin analogues is severely restricted and out-of-pocket expenses are cost-prohibitive, especially for the highest-risk groups. The lack of insurance coverage for obesity medications highlights a crucial gap in equitable care, leaving patients with obesity underresourced and emphasizing the urgent need for health care policies that include obesity treatment to address this disparity effectively.⁶¹ Embedded social constructs, including targeted advertising practices to individuals from higher socioeconomic groups, may also promote fragmentation in medication uptake and use. Increased awareness of these multifaceted barriers reinforces opportunities for external resource referral, superior clinical care, and successful weight management.

ADDITIONAL RESEARCH GAPS AND OPPORTUNITIES

Determining the ideal suite of scalable programmatic interventions for a range of populations is a major research area. Transformative obesity prevention and interventions have yet to be realized, but depend on innovative cross-cutting solutions that incorporate population-specific initiatives for mitigating obesogenic environments. Institutional biases create barriers to obesity-centered care and may prevent adequate evaluation and implementation of effective population- and community-based

interventions. Whereas many programs focus on obesity-centered education, much work remains to elucidate how structural barriers prevent the benefits of education and how multilevel interventions can overcome these limitations. The effectiveness of education programs may depend on cultural practices and individual preferences. High-quality, rigorous data are needed to accurately quantify how (and which) behaviors affect healthy lifestyle choices, such as food purchasing habits.

Recognizing time as a social determinant of health and investigating the health effects of this complex structural barrier represents another major knowledge gap. The literature on disparities in time needed for healthful activities is in its infancy. However, novel tools using ecologic momentary assessments are being used to investigate how interventions are implemented in people's everyday lives. Generative artificial intelligence and mobile technologies offer tremendous potential for increasing access to health-promoting activities, supporting time efficiency, and reducing transportation burden through telehealth-delivered obesity prevention and management care delivery^{62,63} (Table). Until this field matures, we rely on evidence from other sectors to understand the limits of substituting one activity for another in a zero-sum context.

The ideal metric for measuring the success of obesity interventions has not been confirmed. Using weight-based cutoffs and obesity rates to define intervention success undermines the complexity and interconnected sociobiologic systems that contribute to obesity. In addition, whereas multisector interventions may significantly reduce obesity-related comorbidities and improve health, weight is a poor surrogate marker. Weight stigma correlates with health care engagement in both obesity prevention and management programs.^{18,21} Obesity stigma—as a proximal outcome measure of multisector interventions—could predict distal or downstream effects on obesity and obesity-related complications. Other quantifiable outcomes of long-term success could include reduction in prevalence rates of obesity-related complications that are dynamic and responsive to relatively small reductions (5%–10%) in total body adiposity (eg, metabolic associated fatty liver disease and hypertension).

CONCLUSION

The socioecologic causes of obesity and the barriers to addressing this worldwide epidemic are complex and multifaceted. Relationships among barriers are often multidirectional and cascading, complicating the identification of intervention targets. Successful stemming of the obesity epidemic requires a combination of broad multilevel interventions from public policy, multisector efforts, health care leadership, and community participation. By tackling the socioeconomic and structural barriers that drive obesity, these multifaceted approaches can create healthier societies and support long-term solutions to the obesity epidemic.

ARTICLE INFORMATION

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*Modest.

†Significant.

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*Modest.

†Significant.

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