

# Health equity in endocrinology

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**Health equity is when every person can achieve their full potential for health and wellbeing. In this Viewpoint, global experts discuss the root causes and contributing factors to health inequity in endocrinology. Potential action points and research directions to help reduce health disparities are also discussed.**

**What is your definition of health equity and why is it important?**

**Kathryn Backholer:** Health equity is concerned with all individuals having an equal opportunity to attain their highest level of health, regardless of how much money they earn, how educated they are, where they grew up or how they identify. In Australia and in most countries/regions around the world, health follows a socioeconomic gradient. As people's social and/or economic position improves, so too does their health and vice versa. Indigenous Australians live on average 8 years less than non-Indigenous Australian people, with social factors (such as differing access to education, employment, housing and income opportunities) estimated to explain at least a third of these differences<sup>1</sup>. Achieving health equity is about removing the barriers to the achievement of good health, which are disproportionately greater among those with more limited social and economic resources. Addressing health equity is not only an imperative based on social justice; achieving a more equal society than we have currently benefits everyone, through reduced health-care costs, boosts in productivity, and stronger, more resilient communities<sup>2</sup>.

**Osagie Ebekoziem:** According to the [WHO definition](#), "Equity is the absence of unfair, avoidable or remediable differences in health status among groups of people, whether those groups are defined socially, economically, demographically, or geographically or by other dimensions of inequality (e.g. sex, gender, ethnicity, disability, or sexual orientation). Health is a fundamental human right. Health equity is achieved when everyone can attain their full potential for health and well-being."

This definition resonates with me and many health equity researchers for a few reasons. First, it clearly articulates that the observable differences are systemic, based on certain group definitions, but more importantly that they can be addressed. Second, inequities are unjust and unfair; they must be addressed as an individual right. For people living with diabetes mellitus, these health inequities are prevalent in terms of access to care and diabetes mellitus devices (for example, continuous glucose monitoring, insulin pumps and connected pens), glycaemic outcomes, the prevalence of complications and mortality<sup>3</sup>.

**Karen Hofman:** Health equity is a concept that prioritizes social justice. Equity is concerned with proportionate resource allocation, acknowledging that some groups might need more resources due to their circumstances. Major drivers of vulnerability to poor health are known as the 'social determinants of health'. This term encompasses where people are born, live, work, eat and play; poverty and structural racism play a central role. In contrast to equity, the word inequality suggests that resources should be distributed equally between groups. For example, the implication of addressing inequality is that every patient should receive the same treatment or care. This strategy is unlikely to address the needs of those most at risk, who might include people with physical or mental disabilities, racial or ethnic minorities, or gender-diverse individuals. As context and past injustices influence living environments, such populations might need tailored or modified approaches to both social care and medical treatment. Differentiating between equal and equitable distribution of resources is critical to avoid increasing the gap between poor and rich.

**J. Jaime Miranda:** Navigating through existing definitions of health equity shows us its importance and its relevance to the field of endocrinology, a field that is a key contributor to population health and wellbeing. For example, one such definition indicates that "health equity means that everyone has a fair and just opportunity to be as healthy as possible. This requires removing obstacles to health such as poverty, discrimination, and their consequences, including powerlessness and lack

of access to good jobs with fair pay, quality education and housing, safe environments, and health care"<sup>4</sup>. The [US Center for Disease Control and Prevention definition](#) builds upon this explanation with a more proactive tone: "Health equity is the state in which everyone has a fair and just opportunity to attain their highest level of health. Achieving this requires ongoing societal efforts to: address historical and contemporary injustices; overcome economic, social, and other obstacles to health and health care; and eliminate preventable health disparities. To achieve health equity, we must change the systems and policies that have resulted in the generational injustices that give rise to racial and ethnic health disparities". Going a step further, the WHO definition (given in O.E.'s answer above) first signals the gaps and the context where health equity sits, rather than signalling the deficit.

All the definitions point towards a common ground; that is, the existence of disadvantaged groups, with a disadvantage that is amenable to change and is avoidable, and a common goal to achieve people's full potential for health. The importance of having a clear definition of health equity is that it can be synergistic with other societal goals, from medical education, to the utility of clinical practice guidelines, to achieving healthier societies.

**Samuel Seidu:** The definition of health equity in diabetes mellitus care should move beyond the principle of ensuring that all individuals have an equal opportunity to achieve optimal health outcomes, regardless of their social or economic circumstances. The definition is insufficient because even when individuals are provided with these equal opportunities, as we have in the UK National Health Service (NHS) and Scandinavia, those who are most disadvantaged still ultimately do not get optimal treatments<sup>5</sup> and fare worse with respect to outcomes<sup>6</sup>. Therefore, the definition of health equity should involve not just addressing and eliminating health disparities and inequities that arise due to various factors, such as race/ethnicity, gender identity, socioeconomic status, education level and geographic location, but should also prioritize the resolutions to these issues. Health equity must acknowledge the underlying social determinants of health, such as access to quality health care, safe and

affordable housing, nutritious food, education and employment opportunities. By addressing these social determinants and removing barriers to health care, health equity aims to provide everyone with the same chances of attaining and maintaining good health.

## What are the root causes and contributing factors to health inequity and disparities in endocrine and metabolic health outcomes in your region?

**K.B.:** The unequal distribution of power lies at the core of health inequities and manifests in unequal social, economic, political and environmental conditions. A stark example is the highly concentrated power and market domination that lies with a small handful of large transnational food companies<sup>7</sup>. These companies wield huge amounts of corporate power and influence the food environments within which food ‘choices’ are made. The result is an environment where highly processed foods and beverages are excessively available at low costs and are marketed in ways that saturate the daily lives (physical and digital) of our children. This environment acts as a barrier to a healthy diet that is often larger for those with limited social and economic resources than for those with greater socioeconomic advantage, thereby driving inequities in health<sup>8</sup>. Government laws and regulations can correct these market failures by putting the health of people before corporate profits, but too often beneficial changes are relentlessly opposed by the food industry. Lobbying, political donations and public campaigns build political power, resulting in the pre-emptive dismissal of many public health policies before they reach the political table. Policies that do make it through the policy formulation process are often watered down, limiting their effects on health and health equity. This power imbalance leads to accrued resources (for example, money and influence) for the food industry, which benefits from maintaining the status quo, whilst avoidable health inequities in obesity and diet-related diseases are reinforced.

Other important root causes of health inequities are the social conditions within which we live, work, learn and age. Educational attainment, income, employment and housing all have a notable effect on our health. Those experiencing poverty, living in unsafe neighbourhoods or who are on low incomes, do not have the same opportunities to achieve good health as those who are in more socio-economically advantaged circumstances. In the context of overweight and obesity, how

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can a healthy weight be achieved if healthy foods are unaffordable, if poor housing conditions mean inadequate cooking facilities or if there is a lack of safe open spaces to engage in physical activity?

**O.E.:** In the USA, there are multi-level contributors to health inequities in the endocrine and metabolic health field that unfortunately have been very persistent<sup>3</sup>. The root causes of these inequities differ considerably based on the type of inequities or disease. However, the contributing factors can be categorized into three broad classes, namely: personal, institutional and systemic contributors.

To further explain the difference between these broad classes, I share a practical example of potential contributors to racial inequities in type 1 diabetes mellitus (T1DM). Personal contributors can result when diabetes mellitus care providers might have an implicit or explicit belief that non-Hispanic white people with T1DM are better at handling technology or have better support systems than Hispanic or non-Hispanic Black people with T1DM. These beliefs can become large enough to potentially affect decisions about care recommendation or management<sup>9</sup>.

Institutional contributors include health system protocols or insurance company policies that affect everything from a lack of diversity in diabetes mellitus care providers to procedures that introduce barriers to particular groups of people.

Finally, systemic contributors are long standing racial discriminatory laws existing in society. Historical systems and present-day structures have deep racist implications on health and well-being. Discriminatory practices have expanded the effects of systemic racism through the social determinants of

health, including inadequate housing, food insecurity, lack of access to health care or environments that harm rather than support health. Additional stressors on current health care and policy systems, such as the COVID-19 pandemic, have aggravated existing health inequities<sup>5</sup>.

**K.H.:** There are several social determinants and contributing factors that affect endocrine and metabolic health. These are economic policies, development agendas and social norms. Fundamentally, these factors relate to colonization and trade, and specifically in South Africa, to spatial apartheid. For example, 30 years after the dawn of democracy in South Africa, the Gini coefficient (a measure of inequality) for South Africa remains the highest globally. Malnutrition, which includes stunting and wasting, is present in 27% of children under 5 years of age. These conditions both lead to obesity in adulthood, which is another form of malnutrition that occurs in the ubiquitous presence of and advertising of cheap, ultra-processed food and beverages, the so-called obesogenic environment.

For the past decade, diabetes mellitus and cardiovascular disease have made up a large proportion of the burden of disease in South Africa, particularly among women. These obesity-related conditions are driven by ‘commercial determinants of health’, a key social determinant that is the result of a pathological system in which dominant commercial entities influence societal norms and values, behaviour and the environment<sup>10</sup>.

Explicit strategies by industry include the relentless marketing of foods high in fat, sugar and salt, starting in infancy. The entire African continent is considered a growth market by most multinationals, enabled

by weak regulation and cheap advertising that promote unhealthy aspirations. Other factors leading to disparities in outcomes include poor health literacy, and variations in health-care spending and the quality of care. For example, the private sector in South Africa spends US \$1,000 per capita on 15% of the population, compared with the public sector that spends \$250 per capita on 85% of the population.

**J.J.M:** The definition of health equity provides a panorama where disadvantages are present, can be reversed and even better, can be prevented.

Addressing health equity through a focus on disadvantaged groups can provide guidance for and lead to the enactment of group-wide changes, including the achievement of population-wide gains in health and wellbeing. For example, in Latin America, salt iodization was used as a strategy to address iodine deficiency in iodine-deficient regions in which it was highly prevalent until the late 1990s. Iodine deficiency is linked to thyroid disorders and is among the most common causes of preventable brain damage and intellectual disability. This strategy, using regular salt for household consumption as a vehicle to deliver iodine, has been the driver of [international activity to reduce iodine deficiencies](#) throughout the world.

Another global epidemic is type 2 diabetes mellitus (T2DM), which is largely a social disease, and an exemplar of inequities and disparities. Rather than delving into statistics of T2DM burden or poor control among disadvantaged groups, the profound social nature of this disease is exemplified by an experiment around housing in the USA. Between 1994 and 1998, the Department of Housing and Urban Development randomly assigned women with children living in public housing in high-poverty urban census tracts to one of three groups. The first group received housing vouchers that were redeemable only if they moved to a low-poverty census tract. The second group received unrestricted, traditional vouchers, with no special counselling on moving. The third control group was offered neither of these opportunities. The results, 14 years later, showed better indicators, in terms of BMI and HbA<sub>1c</sub>, among those in the group receiving the low-poverty vouchers than in the control group<sup>11</sup>. In other words, addressing a social disadvantage, which in this case was moving out of neighbourhoods with high poverty levels into areas with less poverty, had a positive effect on obesity and

T2DM. These health inequities, which are preventable and amenable to change, have a direct relationship with endocrine outcomes and have been extensively described. [Social statistics from Australia](#) (another high-income setting) show that people living in areas of most disadvantage are more likely than those living in areas of least disadvantage to have diabetes mellitus (6.3% compared with 4%).

**S.S:** Socioeconomic factors, such as income inequality and poverty, limited access to health-care services, disparities in education and employment opportunities, unhealthy food environments, cultural and linguistic barriers, and systemic discrimination are among the root causes and contributing factors of health inequity and disparities in diabetes mellitus and metabolic health outcomes in the UK and most of Europe. Disparities in the prevalence, treatment and health outcomes of diabetes mellitus result from the interaction and accumulation of these factors. The situation is slightly better in Scandinavia, where community structures are more egalitarian.

**What action can be taken by researchers, health-care providers and policymakers to advance health equity in endocrinology?**

**K.B:** Advancing health equity will require a shift in the distribution of power that influences our health away from corporate giants, back to civil society. We need to be prepared to ask ourselves, what kind of society would we design if we knew nothing about the market that has distorted our current perceptions? Would we place so much power and resources in the hands of large transnational corporations, whose primary motive is profit at the expense of public health? Would we allow our children's 'choices' to be manipulated through exploitative marketing by large food corporations? Governments must step up and take bold action to counter the activities and influence of transnational food corporations. Health-care providers and researchers should demand action and generate the necessary evidence to raise the profile of these issues through their everyday work.

Action must also be taken to improve the conditions that shape our daily lives. Social security payments for people in need must, at the very least, allow them to purchase a healthy diet. Increased equitable investment in education will deliver substantial returns on health inequities. Actions to ensure more resilient food systems are essential. The COVID-19 pandemic revealed just how fragile our food

systems are, with broken supply chains, empty supermarket shelves and sky-rocketing prices, all hitting those in lower income brackets (those most likely to already be food-insecure) the hardest.

**O.E:** Many organizations and networks in the USA are actively working to address inequities in endocrinology. One such network is the [T1D Exchange Quality Improvement Collaborative \(T1DX-QI\)](#). T1DX-QI is a learning health network of 55 T1DM and ten T2DM centres.

The network has previously described a multi-pronged approach to addressing health inequities<sup>12</sup>. T1DX-QI has comprehensively used real-world data to quantify real-world equity insights and to benchmark inequitable diabetes mellitus outcomes among centres. Through training and design systems, the T1DX-QI is measuring and testing strategies to reduce the role of implicit bias in diabetes mellitus care<sup>9</sup>. Participating centres are embracing quality improvement methods to set clear goals and test small changes against the immense, and often intimidating, systems and structures contributing to inequitable outcomes. Finally, T1DX-QI is leading diabetes mellitus diverse stakeholder engagement through various strategies, including formal advisory committees (like our [Health Equity Advancement Lab Advisor](#)) and direct engagement of people with diabetes mellitus from marginalized communities.

Researchers, health-care providers and policymakers can expand on the T1DX-QI approach to advance health equity from their various domains. For example, researchers advocate for data access to help identify disparities. Research should be conducted with deliberate attentiveness to health equity considerations. This approach includes strategies to assure diverse recruitment and generalizability of results for all populations in clinical trials or exploring contributors to inequities as part of the research inquiry. Researchers can also consider challenging the status quo by incorporating quality improvement principles to quickly adjust the design and protocol of studies, and avoid missed opportunities after months or years of trial implementation<sup>13</sup>.

Health-care providers should not limit their role in health equity solely to direct care providers, as health-care providers can play a role in institutional and systems level changes. In all our human faults, bias is not a matter of when, but how, and providers should intentionally identify how bias presents in their practice<sup>9</sup>. Within their institutions, health-care providers should lead efforts for culturally appropriate services, by including materials and

care in patients' preferred language wherever possible. As is core to the philosophy of the T1DX-QI, health-care providers can participate in opportunities to share best practices and assertively promote the spread of effective strategies to address health equity with urgency and purpose, transcending organizational and institutional silos and boundaries.

Opportunities for policymakers to support health equity are endless. Institution-level policymakers have a role to play to ensure the education, hiring and retention of people of colour to increase provider racial-ethnic diversity. Presently in the USA, insurance-mediated coverage of diabetes mellitus devices creates numerous barriers to access; policy change is key to expanding access to technology, which enhances quality of life for people with diabetes mellitus. Bold approaches to health-care payment reform, including pay for equity, align with a broader health equity vision.

**K.H:** Researchers play a key role in generating evidence to support policymakers in informed decision making around effective and equitable resource allocation to prevent and treat endocrine and metabolic diseases.

Prevention and health promotion are critical, which means advocating for evidence-based policies that prevent obesity-related conditions throughout the life-course. While there is no single silver bullet, a suite of policies is required that includes legislation and/or regulation that taxes sugary beverages, junk food and ultra-processed food. Other policy examples include bans on marketing to children of unhealthy products on social media and television advertising, and ensuring healthy choices are available in schools. All these population-level interventions provide the best return on investment<sup>14</sup>.

At the health-care delivery level, policymakers must ensure universal health coverage<sup>15</sup>, so that the public have access to high quality care regardless of social, economic and demographic background, in rural and urban settings.

Early screening and diagnosis for obesity-related non-communicable diseases are also critical to ensure that the most vulnerable will not be diagnosed late in the disease progression when little can be done to mitigate the complications. Screening cannot be confined to health service settings alone but should be made available where people go about their daily business, such as collection points for pensions.

To account for equity considerations in developing a health benefits package, an ethics framework (such as the one recently

developed in South Africa) can help navigate challenging decisions and trade-offs<sup>16</sup>.

Another issue is drug pricing. Countries/regions in the global south need to be able to negotiate medications, devices and diagnostics at a fair price. This achievement is possible with the presence of an independent entity to establish cost-effectiveness according to a country/region-specific threshold. This strategy has already been adopted in several countries/regions, including Thailand, Philippines and Vietnam, and in other settings.

**J.J.M:** I propose two actions. First, the advancement of health equity will require a universal understanding of its concept. Above all, we should instil the view that health inequities are amenable to change; therefore, they are also preventable and avoidable, and transformations towards positive outcomes are possible. In the same way that we expect our researchers, health-care professionals and policymakers to have an advanced understanding of the ethics of research with human individuals or zero tolerance for plagiarism, we should strive for universal knowledge of and action towards health equity.

Second, I invite researchers, health-care providers and policymakers to look beyond single individuals and focus on populations. The prominent focus on individual failures, which is common in clinical medicine and endocrinology, has largely framed policy problems in individual (i-frame) and not systemic (s-frame) terms, with the consequence of deflecting attention and support away from s-frame policies<sup>17</sup>. Instead of chasing individual-level effect sizes on a given outcome, population-wide interventions have the potential to reach a wider number of groups and thus provide benefits to a larger number of people, including disadvantaged groups. For example, a community-wide salt substitution strategy in northern Peru showed reductions in blood pressure in the entire population, from 18 years and older, with and without hypertension, and even showed reductions in new cases of hypertension<sup>18</sup>.

In other words, the early training and imprinting of the entire health professional community on the importance of health equity, as well as a focus on acting on inequities with the potential to reach large population-wide changes, should ignite action to advance health equity in endocrinology.

**S.S:** Based on Rawls' Difference Principle<sup>19</sup>, ensuring health-care access for people with diabetes mellitus is a moral necessity,

particularly in the UK NHS, as underprivileged populations and minority ethnic groups are affected disproportionately. The Difference Principle places a strong emphasis on justice and fairness, making sure that the least advantaged groups are given priority when allocating resources. Diabetes mellitus has a higher prevalence and worse health consequences among underprivileged neighbourhoods (compared with affluent areas) and in minority ethnic groups. By merely suggesting that it is enough that health care is free at the point of service, we could be aggravating these inequalities and upholding injustice, as there are other hurdles that prevent people with diabetes mellitus from accessing the NHS. Society can address these disparities, advance equity and enhance the health and wellbeing of the most under-served areas by prioritizing diabetes mellitus care for these communities.

Some key strategies to improve population health in the NHS and address health disparities in diabetes mellitus include: increasing diabetes mellitus awareness and self-management education in different languages; ensuring equitable access to diabetes mellitus screening and management services in local community pharmacies; providing culturally competent care; addressing the social determinants of health; and encouraging collaboration between health-care providers and communities to support prevention and early intervention. These aims can be achieved by addressing barriers such as geographic location, socioeconomic status and language.

Addressing health inequities in diabetes mellitus care in the NHS can yield economic benefits. Reducing health disparities and ensuring equal access to diabetes mellitus management can lead to improved health outcomes, decreased health-care costs, increased productivity, reduced disability rates and decreased burden on the health-care system, ultimately benefiting the economy.

Increasing representation of health-care providers from diverse backgrounds should be the focus. However, when such a strategy is not possible, health-care teams should receive training in culturally competent care to better understand and address the unique needs and challenges of diverse populations affected by diabetes mellitus. This approach involves recognizing cultural beliefs, values and practices that influence health behaviours and tailoring care accordingly.

Policymakers can address the social determinants of health by implementing policies that improve housing, nutrition, education and

employment opportunities<sup>20</sup>. These factors considerably affect diabetes mellitus outcomes and require a comprehensive approach to achieve health equity.

## What research questions should be focused on to advance health equity in endocrinology?

**K.B:** We need to better understand the different circumstances that drive health, recognizing the varied and unique pressures. How do we put the voices and values of those experiencing social and/or economic disadvantage at the centre of endocrinology decision making? Can we design population prevention programmes and policies with, and for, our most vulnerable populations, with the hypothesis that the benefits would then be realized by all? How do the effects of interventions differ for population subgroups and how can they be modified or complemented to ensure that everyone benefits? What evidence do policy makers and practitioners need to advance policies and programmes to advance health equity? Finally, how as researchers, can we respond with action-oriented, solutions-based evidence that prioritizes the health of our most vulnerable people?

**O.E:** There are multiple studies quantifying the extent and persistence of health-care inequities across various endocrine disease states. Researchers should move away from describing the problem to focus on practical solutions. Potential questions that need to be further explored include four areas. First, what are the critical components to achieving health equity? Second, what is the role of addressing major institutional policies in health equity? Third, what are practical strategies to empower patients for shared decision-making? Fourth, how can the health system improve community trust, engagement and participation to reduce the effects of systemic contributors?

**K.H:** To impact population health and to understand how to promote equity will require that questions are addressed, such as how to regulate industry and how to create health-promoting environments. Other potential research topics include the prevalence of mortality and morbidity, and the cost and consequences of chronic non-communicable diseases, not just for the patients but for the entire family. Producing evidence on best buys for health-care systems with equity impact also needs to be explored. In addition, research

is needed on how to best promote fair, equitable and sustainable food systems. Research is also needed that works with vulnerable communities themselves, who can understand trade-offs, what is needed to ensure good care and to incorporate their priorities. Capitation models that specifically address vulnerable communities also need to be investigated. Furthermore, more research is needed on gender issues, the underinvestment in women's health and the impact of endocrine diseases on informal care-givers.

Finally, the methods by which we interrogate these questions must incorporate an equity lens by using approaches, such as extended cost effectiveness analysis focused on socioeconomic quintiles.

**J.J.M:** Assuming that most of the mapping of health inequities is well established and most disadvantaged groups have been well described, our next important research questions should envisage interventions that target inequities at their core. For example, societal changes that prioritize benefits for well-known disadvantaged groups.

With many of these interventions it will take time to observe any changes. Thus, a word of caution and a call for patience is essential before jumping the gun to infer that equity-oriented interventions do not work in the traditional time frame of studies with a short duration (usually a few months).

The focus of future research should be placed on the co-design of health equity-oriented interventions; a co-design process that places front and centre the priorities of disadvantaged groups. Such co-design efforts will yield high returns if the goal is to develop interventions with high levels of uptake and sustained engagement over time. The evaluation of those interventions can benefit from the tools developed in the field of implementation science for complex interventions delivered in challenging contexts. The focus of those evaluations should be placed on the effects of the programme at large, across the multiple layers of the system rather than on the effects on the individual alone, as more of the same will not move the needle in terms of advancing health equity in endocrinology. So far, the majority of the evidence has already focused on individual-level outcomes and health equity calls for system-level changes and adequate system-level interventions.

**S.S:** To advance health equity in diabetes mellitus in the UK and across Europe, researchers should focus on a range of areas:

First, researching the effectiveness of social connections, participatory techniques, diversity representation in health-care teams and community-based programmes can advance diabetes mellitus health equality. The research ought to investigate ways of including various demographics and assess how they affect outcomes and self-management.

Second, it is necessary to investigate the linguistic and literacy-related hurdles to diabetes mellitus care. This knowledge can help with the creation of interventions, learning resources and care-giver education initiatives that are attuned to cultural differences.

Third, the impact of social determinants on diabetes mellitus outcomes and health disparities should be investigated, including socioeconomic position, education, housing and neighbourhood traits. Interventions that target the underlying causes of disparities can be guided by an understanding of these elements.

Fourth, in vulnerable populations, studies should examine the effects of health-care policies, commissioned models and health system structures on access to diabetes mellitus care. Policy recommendations can be influenced by evaluating the efficacy of initiatives, such as [the National Diabetes Prevention Programme](#) and integrated care models.

It is also critical to evaluate how e-health and digital health tools affect glycaemic control and access to care, especially for marginalized populations. Research should examine obstacles to technology uptake and pinpoint tactics for fair application.

Finally, epidemiology and surveillance studies on the prevalence, incidence and trends of diabetes mellitus should be studied in relation to various population categories, especially racial and ethnic minorities, and underserved populations. This information will help the identification of inequalities and guide focused interventions.

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