Health equity in endocrinology

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Health equity is achieved when every person can achieve their full potential for health and wellbeing. In this Viewpoint, experts from around the world discuss the root causes and contributing factors to health inequity in endocrinology, as well as discuss potential action points and research directions to help reduce health disparities.

Q. 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 one's 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 around the world, health follows a socioeconomic gradient. As one's social and/or economic position improves, so too does their health, and vice versa. Aboriginal and Torres Strait Islander people live on average eight years less than non-Indigenous Australians, with social factors, such as education, employment, housing and income opportunities estimated to explain at a third of these differences (1). 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 – a more equal society benefits everyone through reduced health care costs, boosts in productivity, and stronger more resilient communities (2).

Osagie Ebekozien. According to the orld Health Organization (emphasis mine) "Equity is the absence of *unfair*, *avoidable*, or *remediable* differences 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[1]".

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 they can be addressed. Second, inequities are unjust and unfair, they ***must*** be addressed as an individual right. For people living with diabetes (PwD), these health inequities are prevalent in access to care and diabetes devices (e.g., continuous glucose monitor [CGM], insulin pumps, and connected pens), glycaemic outcomes, and complications and mortality[2].

Karen J. Hofman. Health equity is a concept that prioritizes social justice. Equity is concerned with proportionate resource allocation, acknowledging that some groups may need more resources due to their circumstances. Major drivers of vulnerability are the "social determinants of health". This is a term used for 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. For example, the implication of addressing inequality is that every patient should receive the same treatment or care as one another. This is unlikely to address the needs of the most at risk who might include people with physical or mental disabilities, racial minorities, or gender non-conforming individuals. Because 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 for avoiding 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. Some definitions indicate 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."[1] The builds upon this definition 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."[2] Going a step further, and rather than signalling the deficit, the World Health Organization's definition of health equity first signals the gaps and the context where health equity sits, i.e. "Equity is the absence of unfair, avoidable or remediable differences 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."[3]

All the definitions point towards a common ground, i.e. the existence of disadvantaged groups —a disadvantage that is amenable to change and, above all, 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,[4] from medical education,[5] to the utility of clinical practice guidelines,[6] to achieving healthier societies.[7]

Samuel Seidu. Health inequities in diabetes care should not just be defined as a principle of ensuring that all individuals have an equal opportunity to achieve optimal health outcomes, regardless of their social or economic circumstances. This because, even when individuals are provided with these equal opportunities as we have in the UK National Health Services and Scandinavia, those least well-off still ultimately do not get optimal treatments (1) and fare worse with respect to outcomes (2). Therefore, it should involve not just addressing and eliminating health disparities and inequities that arise due to various factors such as race, ethnicity, gender, socioeconomic status, education level, and geographic location, but prioritising the resolutions to these. Health equity must acknowledge the underlying social determinants of health, such as access to quality healthcare, safe and affordable housing, nutritious food, education, and employment opportunities. By addressing these social determinants and removing barriers to healthcare, health equity aims to provide everyone with the same chances of attaining and maintaining good health.

Q. 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 (3). These companies wield huge amounts of corporate power, largely shaping the food environments within which food 'choices' are made. The result is an environment where highly processed foods and beverages are excessively available at relatively low costs and are marketed in ways that saturate the daily lives (physical and digital) of our children. These barriers to a healthy diet are often greater for those with limited social and economic resources, driving inequities in health (4). Government laws and regulations can correct these market failures by putting the health of people before corporate profits, but too often these are relentlessly opposed by these food industry giants. Lobbying, political donations and public campaigns build more political power, resulting in 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 the health and health equity impacts. This power imbalance leads to accrued resources (e.g. money and influence) for the food industry who benefit 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 significant impacts on our health. Those struggling with 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 socioeconomically advantaged circumstances. In the context of overweight and obesity, how can a health weight be achieved if healthy foods are unaffordable, if poor housing conditions

mean inadequate cooking facilities or if there is lack of safe open spaces to engage in physical activity?

O.E. In the United States of America (US), there are multi-level contributors to health inequities in the endocrine and metabolic health field that unfortunately have been very persistent[2]. The root causes of these inequities differ significantly 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 broad classes, I share a practical example of potential contributors to racial inequities in Type 1 diabetes (T1D). The personal contributors can result when certain groups of people working in the T1D industry might have an implicit or explicit belief that Non-Hispanic White people with T1D are more responsive, or can better handle technology, have better support systems, etc. These beliefs can become significant enough and potentially impact decisions about care recommendation or management[3].

Institutional contributors include health system or insurance company policies that impact everything from lack of diversity in diabetes providers to barrier-producing procedures.

Finally, systemic contributors are long standing racial discriminatory laws in the society. Historical systems and present-day structures have deep racist implications on health and well-being. Discriminatory practices have expanded the impact of systemic racism through the social determinants of health, including inadequate housing, food insecurity, lack of healthcare access, or environments that harm rather than support health. Additional Stressors on current healthcare and policy systems, such as the COVID-19 pandemic, aggravated existing health inequities[2].

K.J.H. There are several social determinants and contributing factors that impact endocrine and metabolic health. These are economic policies, development agendas and social norms. Fundamentally they relate to colonization and trade and specifically to spatial apartheid in SA. For example, 30 years after the dawn of democracy, the SA GINI coefficient – a measure of inequality, remains the highest globally. Malnutrition, which includes stunting and wasting is present in 27% of children under 5 years. These both lead to obesity in adulthood, another form of malnutrition that occurs in the ubiquitous presence of and advertising of cheap, ultra processed food and beverages. This is called an “obesogenic” environment.

For the past decade, the burden of disease in SA, especially among females is now led by diabetes and cardiovascular disease. These obesity-related conditions are driven by “commercial determinants of health” a key social determinant that are “private sector activities that affect people’s health, directly or indirectly” (Ref 1). Explicit strategies by industry include 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, variations in health care spending and quality of care. For example, the private sector spends $1000 per capita on 15% of the population, compared to 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 and, importantly, can be reversed and even better, can be prevented. As indicated by the World Health Organization, “health and health equity are determined by the conditions in which people are born, grow, live, work, play and age, as well as biological determinants. Structural determinants (political, legal, and economic) with social norms and institutional processes shape the distribution of power and resources determined by the conditions in which people are born, grow, live, work, play and age.”[3]

Addressing health equity through a focus on disadvantaged groups can guide and enact group-wide changes, including population-wide achievements and gains in health and wellbeing. For example, in Latin America, salt iodization was used as a strategy to reach iodine-deficient areas, highly prevalent in the region until the late 1990s.[8] Iodine deficiencies are linked to thyroid disorders,[9] and were among the most common cause of preventable brain damage and mental retardation.[8] This strategy, using regular salt for household consumption as a vehicle to deliver iodine, has been the driver of throughout the world.[10,11]

Another global epidemic is type 2 diabetes, which is largely a social disease,[12] and an exemplar of inequities and disparities.[13–15] Rather than delving into statistics of diabetes 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 through 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: to receive housing vouchers, which were redeemable only if they moved to a low-poverty census tract; to receive unrestricted, traditional vouchers, with no special counselling on moving; and to a control group that was offered neither of these opportunities. The results, 14 years later, showed better indicators in terms of body mass index and glycated haemoglobin among those in the group receiving the low-poverty vouchers than in the control group.[16] In other words, addressing a social disadvantage, in this case, moving out from neighbourhoods with high poverty levels into areas with less poverty, had a positive impact on obesity and diabetes. These health inequities, preventable and amenable to change, have a direct relationship with endocrine outcomes and have been extensively described.(Tatulashvili et al. 2020; Sortsø et al. 2018; Grintsova et al. 2014) another high-income setting, Australia, show that people living in areas of most disadvantage were more likely than those living in areas of least disadvantage to have diabetes (6.3% compared to 4%).[17]

S.S.

Socioeconomic factors, such as income inequality and poverty, limited access to healthcare services, disparities in education and employment opportunities, unhealthy food environments, cultural and li nguistic barriers, and systemic discrimination are among the root causes and contributing factors of health inequity and disparities in diabetes and metabolic health outcomes in the UK and most of Europe.Disparities in the prevalence, treatment, and health outcomes of diabetes result from the int eraction and accumulation of these factors. The situation is slightly better in the Scandinavian countries, where community structures are more egalitarian.

Q. What action can be taken by researchers, healthcare 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. Healthcare 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 which shape our daily lives. Social security payments must, at the very least, allow people to purchase a healthy diet. More 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 with a lower income - those most likely to already be food insecure - the hardest.

O.E. Many organizations and networks in the US are actively working to address inequities in endocrinology. One of such networks is the T1D Exchange Quality Improvement Collaborative (T1DX-QI). T1DX-QI is a learning health network of 54 type 1 diabetes and 5 type 2 diabetes centers.

The network has previously described a multi-pronged approach to addressing health inequities[4]. T1DX-QI has employed a comprehensive use of real-world data to quantify real-world equity insights and to benchmark inequitable diabetes outcomes among centers. Through training and design systems, the T1DX-QI is measuring and testing strategies to reduce the role of implicit bias in diabetes care[3]. Participating centers 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 diverse stakeholder engagement through various strategies, including formal advisory committees (like our Health Equity Advancement Lab Advisors) and direct engagement of people with diabetes from marginalized communities.

Researchers, healthcare 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 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 may also consider challenging the status quo by incorporating quality improvement principles to quickly adjust the design and protocol and avoid missed opportunities after months or years of trial implementation[5].

Healthcare providers (HCP) should not limit their role in health equity solely to direct care providers; in addition to this, HCP 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[3]. Within their institutions, HCP should lead efforts for culturally appropriate services, including materials and care in patients' preferred language, wherever

possible. As is core to the philosophy of the T1DX-QI, healthcare 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 that education, hiring, and retention of people of color to increase provider racial-ethnic diversity. Presently, insurance-mediated coverage of diabetes devices creates numerous barriers to access; policy change is key to expanding access to technology, which enhances quality of life for people with diabetes. Bold modifications to healthcare payment reform, including pay for equity, align with broader health equity vision.

K.J.H. Researchers play a key role in generating evidence to support policy makers in informed decision making around effective and equitable resource allocation to prevent and treat.

Prevention and health promotion are critical. This means advocating for evidence-based policies that prevent obesity related conditions even during pregnancy. While there is no single silver bullet, a suite of policies is required that includes legislation and/or regulation must that tax sugary beverages, junk food and ultra-processed food. Other policy examples include bans on marketing to children of unhealthy products on social media, TV and ensuring healthy choices in schools. All these population level interventions provide the best return on investment (Ref 2).

At the healthcare delivery level, policymakers must ensure universal health coverage (Ref 3), 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 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 SA can help navigate challenging decisions and trade-offs (Ref 4).

Another issue is drug pricing. Countries in the global south need to be able to negotiate medications, devices, and diagnostics at a fair price. This is possible with the presence of an independent entity to establish cost effectiveness according to a country-specific threshold. This is already happening in Thailand, The Philippines and Vietnam and other settings.

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

Second, an invitation to look beyond single individuals and focus on populations. The prominent focus on individual failures, much 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.[19] Instead of chasing individual-level effect sizes on a given outcome, population-wide interventions have the potential to reach a wider number of groups with modest change,[20,21] and thus provide benefits to a larger number of people, including disadvantaged groups. For example, a community-wide salt substitution strategy 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.[22]

In other words, the early imprinting of the entire health professional community about what is health equity, countering the narrative of deficits that leads to inaction and pessimism, whilst focusing on acting on those 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 (3), ensuring access for people with diabetes is a moral necessity particularly in the UK's NHS, since underprivileged populations and minority ethnic groups suffer disproportionately. The Difference Principle places a strong emphasis on justice and fairness, making sure that the least advantaged are given priority when allocating resources. Diabetes has a higher prevalence and worse health consequences among underprivileged neighbourhoods and minority ethnic groups. By merely suggesting that healthcare is free at the point of service, we could be aggravating these inequalities and upholding injustice, since there are other hurdles the prevent them from accessing this service. Society can address these disparities, advance equity, and enhance the health and wellbeing of the most underserved areas by prioritising diabetes care inside for these communities.

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

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

Increasing representation of healthcare providers from diverse backgrounds should be the focus. However, when this 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. This involves recognizing cultural beliefs, values, and practices that influence health behaviours and tailoring care accordingly.

Policymakers can address social determinants of health by implementing policies that improve housing, nutrition, education, and employment opportunities (4). These factors significantly impact diabetes outcomes and require a comprehensive approach to achieve health equity.

Q. 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, recognising 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 programs and policies with, and for, our most vulnerable populations, with the hypothesis that the benefits would then be realised by all? How do the impacts of interventions differ for population sub-groups 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 programs to advance health equity and how, as researchers, can we respond with action-oriented, solutions-based evidence that prioritises the health of our most vulnerable?

O.E. There are multiple studies quantifying the extent and persistence of healthcare 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.

What are the critical components to achieving health equity?

What is the role of addressing major institutional policies in health equity?

What are practical strategies to empower patients for shared decision-making?

How can the health system improve community trust, engagement, and participation to reduce the impact of systemic contributors?

K.J.H. Researchers can play a key role in generating evidence to support policy makers to use effective and equitable resource allocation for prevention and treatment. It requires broad approaches focused beyond health systems.

To impact population health and understand how to promote equity will require questions such as how to regulate of industry and to create health-promoting environments. Other potential research topics are:

- The prevalence of mortality, morbidity and the cost and consequences not just for the patients but for the entire family.
- Producing evidence on best buys with equity impact.
- How to best promote fair equitable and sustainable food systems
- Research 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.

- Gender issues, the underinvestment in women's health and the impact of endocrine diseases on informal caregivers.

Finally, the methods by which we interrogate the questions must incorporate an equity lens by using methods such as extended cost effectiveness analysis focused on socio economic 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 its core, including societal changes that prioritise benefits for well-known disadvantaged groups.

Whilst many of these changes will take time to observe change, a word of caution, and a call for patience, is therefore essential before jumping the gun to infer that equity-oriented interventions do not work in the traditional timeframe 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.[23–30] The focus of those evaluations should be placed on the impacts 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 vast 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 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 programs can advance diabetes 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 care. This can help with the creation of interventions, learning resources, and caregiver education initiatives that are attuned to cultural differences.

Third, the impact of social determinants on diabetes 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 healthcare policies, commissioned models, and health system structures on access to diabetes care. Policy recommendations can be influenced by evaluating the efficacy of initiatives, such as the National Diabetes Prevention Program and integrated care models.

It is also critical to evaluate how e-health and digital health tools affect diabetes 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 should be studied in relation to various population categories, especially racial and ethnic minorities, and underserved populations. This will help the identification of inequalities and guide focused interventions.

References

Contributors

K.B.

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Competing interests

K.B.

O.E. Dr Ebekozien is the Principal Investigator for research projects funded by Dexcom, Eli Lilly, Vertex and Medtronic Diabetes through his organization T1D Exchange. OE is also a member of the Medtronic Diabetes Health Inequity Advisory Board and has received speaker fees from Vertex and Medtronic Diabetes.

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