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Developmental Origins of Health and Disease, resilience and social justice in the COVID era

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Abstract

The COVID-19 pandemic has shone a spotlight on how health outcomes are unequally distributed among different population groups, with disadvantaged communities and individuals being disproportionality affected in terms of infection, morbidity and mortality, as well as vaccine access. Recently, there has been considerable debate about how social disadvantage and inequality intersect with developmental processes to result in a heightened susceptibility to environmental stressors, economic shocks and large-scale health emergencies. We argue that DOHaD Society members can make important contributions to addressing issues of inequality and improving community resilience in response to COVID-19. In order to do so, it is beneficial to engage with and adopt a social justice framework. We detail how DOHaD can align its research and policy recommendations with a social justice perspective to ensure that we contribute to improving the health of present and future generations in an equitable and socially just way.

Introduction

The COVID-19 pandemic has shone a spotlight on how health outcomes are unequally distributed among different population groups, with disadvantaged communities and individuals being disproportionality affected in terms of infection, morbidity and mortality, and also access to vaccination. Recently, there has been considerable debate about how social disadvantage and inequality intersect with developmental processes to result in a heightened susceptibility to environmental stressors, economic shocks and large-scale health emergencies. In December 2020, in collaboration with the International Society for Developmental Origins of Health and Disease, we organised an interdisciplinary webinar entitled, *Back to Normal? Social Justice and the Developmental Origins of Health and Disease in the COVID Era*, in which we discussed how insights from DOHaD research demonstrate that adopting a social justice perspective is fundamental for supporting health equity and community resilience to the COVID-19 pandemic and future global health threats. In March 2021, the high-profile *Venice Forum* brought together leading experts in DOHaD, health economics, health policy and clinical specialties, along with representatives from civil society and non-government organisations, to discuss *Why investing in maternal, neonatal and child health (MNCH) is critical for sustainable recovery after COVID-19*. A major theme that emerged from the *Forum* was the need for researchers to centre social justice concerns when advocating for a greater and sustained investment in MNCH in the context of the COVID-19 pandemic.

In this piece, we elaborate on this call to centre social justice in DOHaD research and policy recommendations to ensure that we contribute to improving the health of present and future generations in an equitable and socially just way. A social justice framework is sensitive to and attends to how social structures, and in particular structures of subordination and power, maintain inequalities in society, including those affecting health and disease. A social justice approach to health equity seeks to address how social categories such as gender, race, indigeneity,

sexuality, disability and immigration status affect people's health status, access to health care and treatment outcomes. As DOHaD investigates how experiences in early life affect development, it is well positioned to investigate how structural inequality impacts health and well-being during the life course and across generations.

Background: COVID-19 and inequality

The uneven effects of the COVID-19 pandemic on different population groups have been widely documented. In high-income countries in the global North, disadvantaged groups have often experienced the greatest health, social and economic burden. In 2020, data from the UK showed that people from Black and minority ethnic backgrounds had higher rates of infection and mortality from COVID-19. Over 30% of critically ill hospital admissions with COVID-19 were from these minority groups and mortality was over three and four times greater in people of Bangladeshi and Pakistani ethnicities, respectively, compared to those of white ethnicity.[1] A recent geospatial analysis from Chicago (USA) found COVID 'hotspots' in low-income neighbourhoods, higher proportions of mortality in areas with more ethnic minority residents and greater prevalence of comorbidities such as heart disease and hypertension.[2] In general, individuals from ethnic minority backgrounds are more likely to live in high-density housing areas or work in professions that expose them to higher infection risk.[3] Many of the risk factors for a severe effect of COVID-19 – such as obesity or type 2 diabetes – are more prevalent among low-income and racialised groups.[4] While disparities among population groups may be influenced by multiple factors, it is clear that structural issues in societies like unequal employment opportunities and access to healthcare are contributing to widening the health inequalities that existed before the pandemic.[5-7] The effects of inequalities were also clearly seen in low- and middle-income countries (LMICs) – for example, Brazil, where hospitalisation and mortality due to COVID-19 were higher in people living in the 40% poorest areas and from Black or Pardo ethnic groups compared to the 5% living in wealthier areas and white ethnic groups.[8]

Public health responses to the pandemic and its economic fallout also have a disproportionate effect on women and children,[9,10] potentially resulting in long-term effects that have been documented in relation to previous crises and socio-political events such as the fall of the Berlin wall.[11] Adverse socio-economic events during critical developmental periods can act through stress as well as nutritional pathways leading to low birth weight and childhood stunting. This in turn is related to lower educational attainment, employment, earnings and health in later life – consequences which have been seen in both high and LMICs.[12,13] During the current pandemic, heightened levels of gender-based and intimate partner violence have been reported,[14] and these were accompanied by a reduction in access to services that protect women and children from violence and abuse.[15] Especially in LMICs settings, the impact of school closures on school meal programmes and thus children's nutrition are of particular concern.[16] Similarly, in LMICs, the pandemic resulted in a reduced uptake of reproductive, MNCH services such as contraception, immunisation and antenatal care, driven by multiple factors such as a fear of contracting COVID, limitation of resources and an overall shift of focus for health policy-makers and systems towards the control of COVID-19. The UNFPA estimates that, worldwide, 12 million people have experienced disrupted access to contraceptives during the first year of the pandemic, resulting in reduced reproductive autonomy.[17] Adopting measures such as stringent lockdowns would ideally be supported by infrastructure such as uninterrupted food supply chains, income support and access to online learning: several LMICs in particular, such as Bangladesh, Nigeria and South Africa, have struggled to put such measures in place fast enough in 2020–2021, leading to increasing inequalities as already disadvantaged population groups were particularly affected by lockdown measures and the ensuing socio-economic disruption.[18,19]

These figures paint a stark picture and raise important questions of social justice and health equity: how can we address these inequalities in response to the pandemic and make societies more just so that they are more resilient towards future large-scale health emergencies? We argue that DOHaD Society members can make important contributions to addressing issues of inequality in response to COVID-19. In order to do so, it is beneficial to engage with and adopt a social justice framework, both in relation to DOHaD research practices and when it comes to translating findings into health and social policy.

Situating DOHaD in a social justice framework

In the past decades, the DOHaD field has accumulated evidence that experiences during early development, such as nutrition and exposure to stress and toxins, can have long-lasting effects on health (especially on the risk for non-communicable disease) and human well-being more widely (e.g. on cognitive development, mental health, skills and education).[20,21] These experiences have, however, often been treated in a socially de-contextualized way in research – for example, approaching factors such as 'duration of breastfeeding' or 'high-fat diet' primarily as individual variables[22] or focusing exclusively on the maternal body as the most important environment for the developing organism.[23] This has contributed to a public health focus on individual risks and behaviours that is often not only ineffective but also raises social justice issues, as those most disadvantaged are precisely those who cannot afford to mitigate their risk through individual action.[24] In particular, focusing on the mother–child dyad independent of fathers, partners and other caregivers risks reproducing individualistic approaches to health, making mothers primarily responsible for their children's health and disregarding the structural factors that constrain the choices parents have.[25]

However, DOHaD researchers have also highlighted how patterns of adult disease are correlated with early life experiences that are socially patterned in ways that intersect with existing structures of inequality such as social position, gender, race and ethnicity. David Barker's foundational research highlighted how socio-economic deprivation in early life correlates with a higher risk for non-communicable disease decades later in adult life.[26] Kuzawa and Sweet pointed to compelling evidence that the social experience of racism, mediated by developmental processes and phenotypic plasticity, contributes to racial health disparities in the USA.[27] Insights from life-course epidemiology, such as the work conducted by Ben-Shlomo, Cooper and Kuh, further highlight the impact of adverse socio-economic environments and experiences in early life on childhood and adult health outcomes, along with the maintenance and decline of function across the whole of life.[28] These processes operate across and affect the whole spectrum of development, distributing the potential for health and well-being unequally.[29]

These findings from DOHaD and related fields point to how experiences of socio-material deprivation and disadvantage can lead to higher susceptibility to disease and disadvantage among

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specific social groups. These shared experiences are the result of the unequal distribution of material and immaterial resources such as wealth, education, power and the ability to participate in equal measure in society. The DOHaD concept describes one of the ways in which social structures that reproduce and maintain inequality are literally 'embodied'[30] and manifest themselves in varying adaptations to environmental stressors, which we can see in the current COVID-19 pandemic. So-called pre-existing preconditions like obesity and type 2 diabetes are more prevalent among disadvantaged groups, such as Indigenous, Black and Latinx communities in the USA,[31] and correlate with higher hospitalisation and death rates from COVID-19.[4] While these 'pre-existing conditions' are often framed as the result of lifestyle choices, considerable research on the social determinants of health shows that they are rooted in social-structural inequalities. DOHaD research has the potential to add to this picture, suggesting that health vulnerabilities also have long-term origins linked to past socio-economic inequalities. By pointing to the importance of critical windows of time such as early life during which the trajectory of responses to later challenges can be established, a DOHaD perspective thus adds to and complements the 'weathering' hypothesis that states that social and economic disadvantage might result in cumulative damage to the individual.[32] In addition, a DOHaD perspective traces how low resilience may be passed across generations, linking historical structures of subordination and suppression, such as racism, apartheid and colonialism, to present-day inequalities in health.[27]

In this context, it is important to think of resilience not just in biological terms (e.g. as immunity to stressors) but as a complex phenomenon that is embedded in social networks. Resilience should be thought of not as merely an individual property but as a shared collective and relational capacity that potentially spans generations. Communities and societies can foster resilience through the equitable distribution of resources, such as wealth, education, healthcare and social support. When people have access to such resources, social support and strong interpersonal relationships, they are more likely to withstand stressors such as health emergencies. While it is often implied that disadvantaged communities have low resilience, it is sometimes the reverse – with disadvantaged communities having developed support networks that make them more resilient in face of adversity. It is therefore important to study community resilience empirically, so that we can learn from initiatives that have already shown successes. DOHaD, we argue, can play an important role in advocating for the support of community-led initiatives that promote MNCH and community resilience. However, this will require an active engagement with fields in the social sciences and humanities that study the history and sociology of health disparities, as well as activists and community leaders.

DOHaD and community resilience in the COVID era

In order to support community resilience in the COVID era, it is important to not merely return 'back to normal' but to develop interventions and promote policies that actively promote health and social equity by improving the living conditions of vulnerable communities and population groups. Since health and social equity are closely interlinked, social and economic policies that promote social justice can be an effective way to improve health throughout society and across generations. This is especially important in the present situation where the economic fallout from the pandemic exacerbates pre-existing inequalities linked to health, gender, race, social position and age, with potentially disastrous effects as they may affect future generations.

The DOHaD community can, and from our perspective should, be a powerful advocate for promoting such policies. In recent years, DOHaD has lobbied forcefully for better investments in MNCH, pointing to economic studies that show how relatively small investments in MNCH can advance human health and social flourishing in a variety of documented ways in both the shorter and longer term.[10] But investing in improved living conditions of present and subsequent generations should not just be a question of an economic cost–benefit analysis, but should also include social justice and health equity. And conversely, in order to be effective, policies that promote MNCH should be guided by a social justice framework in order to avoid prioritising individual responsibility over social change.

In what follows, we detail how DOHaD can align its research and policy recommendations with a social justice perspective.

1. DOHaD research should engage in building a stronger evidence base for tracing how social inequalities intersect with the development of health and disease. Research studies should be designed in ways that allow tracing how factors that influence the development of health and disease over the life-course are socially patterned. This in particular requires regarding factors such as race/ethnicity, gender and socio-economic position not as individual-level characteristics, but complex social processes that stratify society into different groups.[33] In addition, we need studies with larger, more diverse population-based samples in order to produce knowledge on how different social determinants such as socio-economic position, race and ethnic background contribute to the development of health and disease.[33] Such studies should explicitly engage with social science understandings of the social determinants of health in order to inform research questions, data gathering and the interpretation of results. Currently, funding avenues for integrating social scientists into the design and conduct of cohort studies are limited, and we need new funding schemes for such interdisciplinary work.
2. Related to this, embracing a social justice agenda means empowering and involving the groups and communities one studies and works with. For this, we need a better understanding of the social contexts and life worlds in which 'health' is situated, of what kinds of resources are needed and of which interventions would be desirable and effective. One way of doing this is through actively engaging communities in processes of co-creating research practices, in an inclusive way that involves and benefits members of disadvantaged communities and offers opportunities for both informed consent and refusal.[34] Partnering up with grass-root initiatives in communities can help identify and address pressing needs (e.g. related to food insecurity or unemployment) and actively support communities to have agency in dealing with the complex problems they face.
3. In order to develop effective and evidence-based interventions that promote community resilience, we need new and effective ways of measuring resilience. In order to understand how communities adapt, survive and even thrive during times of adversity, mixed qualitative and quantitative methods may be needed to measure community resilience in its entire complexity. At present, data monitoring systems are often not strong enough to highlight inequalities. Providing better monitoring systems may foster social and political accountability

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towards disadvantaged communities. In order to be effective and democratic, such monitoring efforts should be installed in cooperation with community members and not be just another level of surveillance that marginalised communities must endure.

Above all, investing in policies that promote health and social equity accords with principles of social justice and is simply the right thing to do in a world of extreme inequalities. These principles should guide the ways in which research and interventions are designed and implemented – focusing on empowering and taking the lead from disadvantaged groups and communities to address structural inequalities that have life or death consequences during the COVID-19 pandemic and beyond.

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