Non-Communicable Diseases, Food Systems and the Sustainable Development Goals

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Key messages

- During the era of the Millennium Development Goals (MDGs), non-communicable diseases (NCDs), along with overweight and obesity, increased among populations almost everywhere.
- NCDs are currently the most common cause of death and disability worldwide, accounting for 68% of global mortality, or two out of every three deaths.
- Connected with a rise in obesity and NCDs, we are facing an unprecedented change in demography, epidemiology and diets
- Diet is the number one risk factor for NCD-related morbidity and mortality.
- The health and agriculture sectors have an essential role to play in the prevention and treatment of both communicable diseases and NCDs.
- Food and health systems need to work synergistically to bring about effective change
- Creating innovative ways of acknowledging and identifying nutrition issues, providing and implementing comprehensive nutrition interventions, and delivering nutrition education for preventative purposes will also be essential in order to reverse NCD trends.

The Sustainable Development Goals and inclusion of nutrition- and diet-related NCDs

A post-2015 era of development has been ushered in. With the approval of the Sustainable Development Goals (SDGs) at the UN General Assembly in New York in September of 2015, we said goodbye to the Millennium Development Goals (MDGs), assessed our past achievements, and worked towards a broader, bolder set of targets that will steer our world onto a new path of sustainable development.[1]

Two major goals of the SDGs directly relate to nutrition: SDG2 and SDG3, as **Table 1** illustrates. Many of the other 15 goals indirectly relate to nutrition and diet, by touching on areas such as climate change and natural resources, education, and women's empowerment, for example.[2]

The continued inclusion of nutrition in the SDG agenda is of critical importance to bridge the progress made during the MDG epoch. While much was achieved in the past, the MDGs fell short of achieving their objective of eradicating undernutrition. The final year (2015) of the MDGs indicated that the proportion of undernourished people in the developing regions had fallen by almost half since 1990, from 23% in 1990 to 13% in 2015, and underweight for age among children under five declined, although at unequal rates and not everywhere.[3]

What the MDG commitments did do was provide the momentum for countries to track progress toward globally agreed poverty reduction targets, which included reducing hunger and undernutrition.[4] At that time, communicable diseases were tear-

TABLE 1: Nutrition-related SDGs, their targets and indicators

Goal	Target Number	Target	Indicator
SDG2: Zero Hunger	2.1	By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round.	2.1.1 Prevalence of undernourishment 2.1.2 Prevalence of moderate or severe food insecurity
	2.2	By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons.	2.2.1 Prevalence of stunting of children under five 2.2.2 Prevalence of weight by height of children under five (wasting and overweight)
SDG3: Good Health and Wellbeing	3.4	By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being.	3.4.1 Mortality due to CVD, cancer, diabetes or chronic respiratory disease

ing apart many of these countries. What the MDGs did not pledge to do was track more meaningful indicators of undernutrition – stunting and wasting – which are improved and more actionable indicators for tracking both chronic and acute malnutrition. As it now stands, stunting continues to wreak havoc in many nations, and 159 million children are stunted (although this figure is slowly declining).[5] Another 50 million children are wasted.[5] The SDGs have both stunting and wasting as primary indicators to be monitored over the next fifteen years.

During the era of the MDGs, slowly, and insidiously, non-communicable diseases – mainly cancer, cardiovascular disease (CVD), chronic respiratory diseases, and diabetes – along with overweight and obesity were increasing among populations almost everywhere. Virtually no country remained untouched. The burden of overweight/obesity and NCDs was completely ignored in the MDG agenda. But now, this has changed. Childhood overweight is an indicator in SDG2 and a NCD reduction target is embedded in SDG3. However – shockingly – there is still no target or indicator to track overweight and obesity in adults. The MDG agenda also allowed for significant investments in communicable diseases such as HIV/AIDS and TB, which helped bolster health systems in many low-income countries. This improvement to health systems could be seen as an opportunity for easier entry points in treating complex, chronic diseases such as NCDs.

Recognition of NCDs as part of the SDG agenda aligns well with other goal-setting agendas, including the World Health Organization's Comprehensive Implementation Plan on Maternal, Infant, and Young Child Nutrition, as well as the six Global World Health Assembly Targets 2025 and the nine global targets on NCDs, endorsed by the World Health Assembly in 2012 and 2013 respectively. Furthermore, in November of 2014, governments committed to ending hunger and malnutrition in all its forms at the Second International Conference on Nutrition (ICN2).

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Beast of burden

Overweight and obesity are major risk factors of NCDs, and obesity trends are not moving in the right direction. Currently, a staggering 2.1 billion people suffer from overweight and obesity globally[6] and an estimated 41 million of them are overweight children under five years of age. Two-thirds of those children reside in low- and middle-income countries.[5,7] An updated analysis of obesity trends[45] further delineates that 266 million men and 375 million women are obese. These growing rates of overweight and obesity worldwide are linked to a rise in NCDs – life-threatening conditions that are overburdening health systems.

NCDs are currently the most common cause of death and disability worldwide, accounting for 68% of global mortality, or two out of every three deaths. Of the 38 million deaths due to

NCDs in 2012, 16 million or 42% were premature and largely avoidable – up from 14.6 million in 2000. Seventy-five percent of these deaths occur in developing countries.[9] CVD alone is a significant cause of premature death and the primary driver of morbidity for all NCDs, the largest burden of which occurs in low- and middle-income countries.[10] As for diabetes, an estimated 422 million adults were living with this condition in 2014, compared to 108 million in 1980.[8] NCDs are killing people at a younger age in low- and middle-income countries (LMICs), in which 30% of NCD-related deaths occur before the age of 60 (the productive age bracket) as compared to 13% in high-income countries.[11,12] Higher death tolls are also associated with poorly functioning health systems in many LMICs.

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If countries want to make a dent in the obesity and NCD pandemics and attempt to achieve SDG2 and SDG3 drastic changes will need to occur. These will involve cost-effective strategies that include reducing modifiable risk factors (related to tobacco smoke, alcohol, diet and physical activity), coordinating mandates between health and agriculture sectors, strengthening and connecting health and food systems, improving surveillance, and expanding coverage of essential medicines, technologies and treatments.[13,14]

Spanning systems

Connected with a rise in obesity and NCDs, we are facing an unprecedented change in demography, epidemiology and nutrition transitions globally, regionally and within nations. Dietary demands, needs and appetites are also shifting. As countries get wealthier, demand for animal-source foods, sugars, oil and fats increases. With the rise in incomes, both Engel's and Bennett's Laws hold true: people spend less of their income on food, and diets change towards more luxury foods, with less reliance on staple grain foods as the majority of their calories.

These transitions are driving a new demand for the way food is being grown, processed and consumed.[15–17] Diets are shifting towards food preferences higher in sugar and refined carbohydrates and salt. Beverages often laced with high proportions of sugar are consumed in greater amounts along with packaged, processed foods. Vegetable oil intake is on the rise, along with snacking and eating away from home. At the national scale, diets are shifting from plant-based diets rich in fruits, vegetables, and legumes to highly refined foods, meats and dairy products in all but a few poor countries that cannot afford the shift.[18–20]

Diets are important when thinking about morbidity and mortality related to NCDs. Forouzanfar and colleagues[21] found that diet – especially diets low in fruits and vegetables, whole grains, nuts and seeds, milk, fiber, seafood omega-3 fatty acids, polyunsaturated fatty acids, and high in red meat, processed meat, sugar sweetened beverages, trans fatty acids and sodium – is the number one risk factor for NCDs (accounting for 11.3 million deaths and 241.4 million disability-adjusted life years [DALYs]). High body-mass index has significantly increased its contribution to NCD risk over the past 20 years.[21] Research shows that the type of diet and overall dietary patterns matter: diets heavier in meats (especially processed meats) put people at higher risk of multiple NCDs as compared to Mediterranean, pescatarian and vegetarian diets.[22,23]

So how do we begin to make a dent in the burden and make changes to diets and their subsequent health outcomes? Functioning, connected and strong public health and food systems are important contributors towards positive change. This will take coordinated, funded and committed leadership from health and agriculture ministries. If food systems are insufficient, effects on health can be negative. A healthy and more sustainable food system can improve the health of communities across the lifecycle through improvements in the way food is produced, processed, packaged, labeled, distributed, marketed, consumed and disposed of.[24] However, the globalized food system is in need of a major overhaul.[25] Hawkes and Popkin[20] call for the nutrition and NCD communities to come together to provide evidence and advocate for healthier food policies and systems. Similarly, the health sector takes the responsibility to emphasize, support and ensure health of food producers and consumers, especially women.[26]

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The health sector has an essential role to play in the prevention and treatment of both communicable and non-communicable diseases, which can have deleterious effects on nutrition. In turn, poor nutrition can serve as a risk factor for CDs and NCDs, and compromised health can put one at risk of poor dietary intake and compromised nutritional status.[27] Strengthening health systems

A local food store in Nepal

is essential for building a supportive environment for nutrition assessment and monitoring, diet counseling and education, and for integrating nutrition into existing health care treatment and services.[27] Creating an institutional culture where health care providers in the health system value nutrition, and understand their role in providing nutrition care, will be important if we want to make a dent in the complexities of obesity and NCDs.[28]

Food and health systems need to work synergistically to bring about effective change. This requires thoughtful integration between interventions or approaches, especially when an already existing collection of distinct vertical programs exists.[29] "Every intervention, from the simplest to the most complex, has an effect on the overall system, and the overall system has an effect on every intervention."[30] Services, interventions and solutions that are bundled or packaged across food and health systems can be more effective and advantageous.

Approaching nutrition through a multi-sectoral lens is – in theory – a starting point, but the realities of making that work effectively in a trans-sectoral, collaborative way is another matter altogether.[31] Scientific discovery and operations research have provided new ways of assimilating these sectors and systems approaches so as to incorporate nutrition, but we need more examples of how to make it work across diverse contexts. One size will not fit all.

Optimizing opportunities

There are several opportunities that need to be harnessed in the short term. The political will and momentum are there. The rising trends of obesity and NCDs are not a secret anymore, and no country is immune. The UN General Assembly met in 2014 to discuss the burden of NCDs. The resulting NCD declaration characterized NCDs as a threat to development and a cause and consequence of poverty and inequality. It emphasized the importance of several established initiatives, including full implementation of the WHO's Framework Convention on Tobacco Control and the WHO's Global Action Plan for the Prevention and Control of NCDs 2013– 2020 (NCD Plan) which set out nine voluntary global targets for NCDs, including the goal of a 25% mortality reduction for key chronic conditions.[44] This was the first time they had met on a health-related issue after HIV/AIDS. Along with political will and commitment, targets have also been set. The World Health Assembly has recognized obesity as an issue, and the WHO has an NCD plan in place. There will be a need for countries to take on food and health system challenges and most likely to overhaul their priorities, structures and interactions across sectors. This will call for a concerted effort and unshakable political will.[20]

There is a need though for better target-setting. The SDGs missed the mark in that adult obesity is not tracked, nor are some of the behavioral risk factors such as poor diets. However, the buck does not stop at the global level. Countries have the option to pick the indicators that are important to them. We encourage each country to build up its information systems to track NCD behaviors and risk factors for both adults and children. Behaviors include tobacco use, physical inactivity, unhealthy diet, and the harmful use of alcohol that can lead to four risk factor changes

A young man has his blood pressure monitored in Ghana.

that are signs of early NCD development, including raised blood pressure, overweight/obesity, raised blood glucose and raised cholesterol. We also encourage countries to track dietary intake through better surveillance. Because diets are so key to NCD risk, and are a proxy of a healthy (or unhealthy) food system, we need to better understand what people are eating, how much their diet costs, where they get their foods from, and their preferences concerning how to access healthy food. Thereafter, that data should be used to drive programmatic work and localized interventions.

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Investments in the health sector should match the current disease burden that nations face. We are seeing shifts from communicable to non-communicable diseases. While the communicable and undernutrition agenda is far from over, there needs to be some investment and ramp-up to address NCDs. Each year, more die from cardiovascular disease (30% of deaths in a given year) than from all communicable diseases combined.[10] And treating NCDs is costly. Many households are forced to pay out-of-pocket costs to treat NCDs, incurring catastrophic long-term health expenditures that push them into yet deeper poverty.[32] We also know that obesity will generate significant health care costs. Globally, it is estimated that from 2011 to 2025, the economic burden of NCDs will be US$7 trillion, with cardiovascular disease accounting for most of that expense.[10] Yet NCDs receive less than 2% of development assistance for health.[33]

Advocacy and grassroots movements matter. We saw this with the HIV/AIDS movement, and we are seeing stirrings of food movements that advocate changing the way our food is produced and consumed in the USA and the UK. Civil society organizations can take the lead in advocating for countries to take NCDs seriously and jumpstart childhood obesity prevention programs that bolster local food systems.

Filling fissures

Food and health systems both need strengthening to be resilient against shocks. We saw in Liberia how both systems were quickly dismantled by the Ebola crisis, following years of reconstruction in the wake of conflict.[34] We are certain to see more conflicts and pandemics, some more challenging than we can even imagine, and it is crucial that basic health care and ample food supplies continue to function even in these very demanding conditions.

Data gaps are hindering accountability and progress. The Global Nutrition Report called for more rigorous data collection in order to ensure accountability.[35] This cannot be stressed

enough. If you don't track it, the perception is that the problem "doesn't really exist."

Creating innovative ways of acknowledging and identifying nutrition issues, providing and implementing comprehensive nutrition interventions, and delivering nutrition education for preventative purposes will also be essential in order to reverse NCD trends.[28] The nutrition community needs a 2.0 reboot in the way we implement programs that engage and empower consumers.

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Early testing for prevention and treatment is critical, particularly for obesity prevention in childhood.[36] We also need rapid diagnostic tests for NCD risk factors that can be used in low-resource settings (i.e., blood glucose and cholesterol tests).[37]

Capacity development will be the lynchpin if we want to focus on the prevention, along with the treatment, of complex diseases such as diabetes and cancer.[38] Even in the USA, which has one of the most efficient health and food systems in the world, we often focus on treating obesity and NCDs, rather than on preventing them through food-based approaches such as improving school meals, redesigning point-of-sale food placements, taxing junk food and sugar-sweetened beverages, and adjusting food labels, to name but a few possible measures.[39,40] Human and institutional capacity will need to be re-thought in the post-2015 world.[41]

We need more productive reflection and dialogue on the moral responsibilities of governments, industry and individuals. Whose duty is it to ensure we have a food and health system that promotes wellbeing? The public has the right to information and knowledge, but the food environment also needs to be just: equitable and healthier, while allowing for self-determination and liberties and minimizing non-malificence.[42]

It is essential to put in place systematized crosschecks or "watchdog" measures that ensure the SDG agenda remains equitable and doesn't simply target those who are better off.[43] The point is help the most vulnerable and those who are the worst off (i.e. the so-called "social lottery"), and to take into account racial, ethnic, gender, education and geography barriers to achieving progress.[44]

Conclusion

No country has yet been successful in fully addressing the obesity or NCD burdens, but that doesn't mean that this is not something that can be achieved. The SDG agenda represents an opportunity to make significant investments and formulate healthy food policies that reinvigorate food and health systems. Although there are gaps and hurdles to overcome, the opportunities are there, waiting to be harnessed.

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