The Federation's Pages

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Bettina Borisch, Federation's Pages Editor

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Diabetes and climate change: Different drums – same orchestra

We are all conscious of, and can imagine, at least to some degree, the repercussions for human health of the increasing number and intensity of climate change-related natural disasters such as floods, wildfires, famines, tsunamis, earthquakes, and tornadoes. The aftermath of these extreme events does not bear thinking about: family members injured, missing, or even dead; no sanitation; no drinkable water; no electricity to power even essential health services like hospitals or perhaps the hospitals are gone altogether, destroyed by the disaster. No refrigeration and food, if any was available at all it would be contaminated and probably shared with the surviving vermin. Transport and communication services would be absent or severely damaged and there would be little or no access to essential medications, reagents, or supplies.

Such conditions are horrific for anyone. However, without access to life-saving insulin, a person with Type 1 diabetes can die very quickly of ketoacidosis – especially in the presence of a severe infection, diarrhoeal disease, or food poisoning. And this happens over and over again, all around the world, whenever there is a catastrophic weather event or earthquake, or the like. Picture children with Type 1 diabetes dying, or possibly even

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worse – young adults with dependent children dying, leaving their children to unimaginable hardship or poverty – the repercussions of which may well stretch across subsequent generations.

Less dramatic and emotive but on a much larger scale, and in a way more insidious and sinister, Type 2 diabetes and climate change are ‘different drums’ but play very much from the same orchestra, and their risks and causes are rooted in the same vectors. For example, over- or poorly planned urbanisation, globalisation, mass food production, over-automation, and the overconsumption that we rely on so heavily to drive our economic growth are also driving the obesity/diabetes epidemic and environmental damage.

Type 2 diabetes accounts for 90 per cent or more of all diabetes cases globally and is, therefore, responsible for, by far, the greatest proportion of the public health and cost burden attributable to diabetes. Unlike its autoimmune mediated counterpart (Type 1 diabetes), Type 2 diabetes is associated with lifestyle factors including physical inactivity and inappropriate diets (over-nutrition and sometimes undernutrition) that go hand in hand with high carbon emitting activities like inactive transport, sedentary work, mass-produced and mass-manufactured food. Thus, while climate change and Type 2 diabetes do not cause each other, the interaction of our genes with the increasingly high carbon environments – even in many low- and middle-income countries – has wide implications.

The Food Environment

Take food for example. A healthy high-fibre diet rich in fruit and vegetables is central to preventing and optimising the outcomes of Type 2 diabetes and the avoidance of obesity and, indeed, a wide range of other health problems. It is also worth pointing out here that such diets are not only healthier for people but are infinitely kinder to the planet than diets that are predominantly meat-based or largely composed of manufactured food.

The obesity epidemic underpins the Type 2 diabetes epidemic. The way we produce, store, transport, distribute, prepare, and overconsume food is not only contributing to obesity and Type 2 diabetes (as well as to cardiovascular disease and certain cancers), it is also causing excessive generation of greenhouse gases (GHG) and soil degradation and depletion. Thus, it should not surprise us that there is evidence from a group of UK researchers of an association between GHG and BMI.¹

There is also the issue of micronutrient depletion and overeating. The micronutrients found in our plant-based food come from the soil the food is grown in, but we have depleted vital soil properties through damaging food production methods. Further, much plant-based food production is now

engineered to yield high quantity rather than high quality crops. In either case, there are a number of studies demonstrating nutrient deficiencies and declines compared with a generation or more ago.²⁻⁴ The implication is that we have to eat quantitatively much more than our parents and grandparents did in order to get the same amount of essential vitamins, minerals, and trace elements. In addition, I wonder to what extent this effect might contribute to overeating and overweight – an antecedent risk for Type 2 diabetes.

Land Mix Use

Much is currently written about food insecurity in relation to soil degradation and depletion, loss of biodiversity, deforestation and desertification (fertile land that has been turned into desert through severe environmental damage), rising tides, and salination of food producing land and water. Land mix use provides another illustration of the overlap between the obesogenic environment and contributors to climate change. In all countries, from rich to poor, it is depressingly easy to find examples of bad policy decisions about land mix use that contribute to risk factors for both diabetes and climate change, for example, building cities or allowing mining on rich food growing land.

In many countries, accelerating urbanisation is taking up prime agricultural land and making a mockery of the term fresh food – which now has to be produced further and further from the point of consumption – thus making its journey from field to fork more GHG intensive, more expensive, and diminishing its nutritional value.

My own country, Australia, is incredibly rich in natural resources and as a result is currently being consumed and permanently scarred by open cut coal and mineral mines, coal seam gas exploration, and other forms of mining. There is fierce ongoing contestation over land use, and also with water rights, with the mining industry almost invariably winning out over pastoral food producing local industries such as crop, sheep, and cattle growing.

Air Pollution

There are many sources of environmentally damaging air pollution and toxic emissions, including but by no means limited to mining. Cars are said to contribute around 30 per cent of air pollution in cities, and every extra hour spent in a car each day is estimated to increase the risk of obesity by 6 per cent.⁵ We have known for a long time that the autoimmune process that is Type 1 diabetes can be triggered by environmental toxins and there are reports emerging now of an association between particulate air pollution and

the development of diabetes.⁶ We also know that excess mortality in people with diabetes rises on high air pollution days – often manifest as deaths from heart attack of which diabetes is a major cause.^{7,8}

Over-Urbanisation

In mid 2007, almost exactly 5 years ago, we passed the point where for the first time in the history of the world more people live in cities than not. Our massive urban centres are major carbon emitters. Further, all cities tend to have slum areas and, despite the perception of Type 2 diabetes as a ‘disease of affluence’, there are epidemiological reports of higher rates of diabetes and obesity among slum dwellers compared with the background population.⁹ Generally, people who live in cities tend to work in sedentary, over-automated jobs – offices and factories. They face massive barriers to opportunities for physical activity such as walking, cycling, and playing sport – and such activities may not be safe. They have greater exposure to air pollution, restricted access to fresh food, and increased access to unhealthy food – all factors that impact on the development and management of diabetes.

It Does Not Have to Be This Way

The world we live in now is the way we made it – or allowed others to make it – and either way we are all responsible. However, our scientists are smart, our business leaders are clever, and our politicians know that the way we live now is not sustainable.

There are solutions if we want them. In its June 2012 report on diabetes and climate change, the International Diabetes Federation outlines a number of areas where simultaneous coinvestment in diabetes and climate change makes intuitive sense.¹⁰ Thoughtful and strategic urban planning and design can go a long way to mitigating vectors of climate change and diabetes as well as a myriad of other diseases and ailments. And perhaps, we should try the Scandinavian model of capitalism, where government and industry really do consult with each other and with the citizenry to optimise the common good alongside common good. Or maybe we should adopt ‘gross national happiness’ as a yardstick for achievement as does the tiny country of Bhutan.

Whatever we do, it must be well thought so as to avoid harmful unintended consequences, and it must be done soon. Sustainability rests on three core pillars – environmental, economic, and social. Our advocacy and planning for the future, and particularly for the sustainable development goals that will replace the Millennium Development Goals after 2015, must not only be mindful of the interface between these three pillars, but should also take an

account of their links with diabetes and related noncommunicable diseases and the harms they cause to human health and development globally.

Ruth Colagiuri, Director

Contact:

Health and Sustainability Unit, Boden Institute, The University of Sydney

E-mail: ruth.colagiuri@sydney.edu.au

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