

Re-imagining healthcare – in partnership with nature

In recent years there has been mounting evidence that interacting with nature has numerous benefits on human health. We can define health as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”¹ which highlights that communication with the natural world is a vital part of biopsychosocial spiritual well-being. It could be said that interacting with nature may be imperative not only for survival, but also for human quality of life².

However modern society poses many problems. Urbanization, sedentary lifestyles, and even resource exploitation leading to pollution and climate change, all reduce the possibilities for contact with nature. Epidemiological changes, with chronic lifestyle-related diseases and mental health conditions as major causes of morbidity and mortality, mean that interventions for the future are needed which target various aspects of public health on a local and global scale. Healthcare resources are severely stretched, and therefore cost-effective interventions are necessary, employing a multi-disciplinary approach (with both medical and non-medical professionals). Only then will we have “*a healthy and productive life in harmony with nature*”.³

Human impacts on the natural environment – how they rebound on global health

Prospering ecosystems provide things essential for human health. These include nutrition, clean air and fresh water. Natural environments also offer innumerable possibilities to improve human health on a global scale. Natural products constantly contribute to the pharmacopoeia, as well as research and diagnostic tools. Examples of biologically active compounds include cyclosporin (an immunosuppressant from fungus), lovastatin (from oyster mushrooms), and compounds from slime molds from riverbanks, which can treat taxol resistant tumors⁴. The ‘taq polymerase’ was isolated from bacteria that live in hot springs, and is crucial in the Polymerase Chain Reaction, a now indispensable technique in molecular biology.

However the ‘Rio Conventions’ (from the 1992 Earth Summit) drew attention to some of the challenges that are threatening our natural environments. Unsustainable use of ecosystems has led to irreparable degradation, with negative consequences on health and well-being due to deforestation, pollution, loss of biodiversity and climate change⁵. Deforestation results in the loss of vegetation, which improves air quality by reducing levels of pollutants and particulate

matter. Loss of biodiversity can have a direct impact on food availability, leading to increased vulnerability to disease and malnutrition. Climate change may aid the spread of diseases as it creates conditions more favourable for disease vectors. These all threaten to destabilize health systems unless we begin to work more in partnership with nature. The UN conference on Sustainable Development in 2012 discussed the importance of creating a greater awareness of how environmental factors interact with the social determinants of health. In the pursuit of public health, at all levels from local to global, it is crucial that careful attention is paid to the processes of global environmental change⁶.

Our sense of place – urban versus natural environments

E.O. Wilson described his ‘Biophilia hypothesis’, whereby humans have an innately emotional affiliation with nature and other organisms⁷. Contact with nature is beneficial on a personal level and humans can engage in various ways, be this viewing nature, being in the presence of nature, or actively participating in nature⁸. This has implications on all aspects of health. So why is nature so beneficial to humans? Kaplan and Kaplan’s attention restoration theory proposes that natural environments are restorative, contributing to attentional recovery and reducing mental fatigue⁹. By realizing the benefits of nature, we can consider current and predicted future public health problems, and work in partnership.

‘Sense of place’ is becoming increasingly recognized as a public health construct¹⁰. It is not a new notion; Hippocrates first wrote in ‘Airs, Waters, and Places’ of the distinction between healthy (such as sunny, breezy hillsides) and unhealthy places (such as swamps). Humans have a deep-seated connection with the natural world, which is probably evolutionary. Place and setting have multiple effects on health and disease status; these are holistic in nature, impacting psychological and physiological health¹¹. Indeed in one famous study, postoperative patients who had been randomly assigned to rooms with views of nature and trees (rather than a view of bricks) had statistically shorter hospitalizations as well as less need for pain medications.¹² These principles could be used in the future, with simple design changes having massive implications. A 2015 paper ‘designing the future hospital’ describes an architect’s perspective whereby there is an emphasis on natural light and views throughout, wards and operating theatres look out across a private garden, and natural ventilation is provided¹³. This is very different to the traditional, institutional hospital surroundings we are used to, but patients could experience real benefits by clever designs bringing in the natural world, at a relatively low cost.

The recent dominance of urban environments has many implications on our health. Pollution, the heavy use of motor vehicles, and other ‘urban stresses’ such as traffic, road rage, crime, dense crowds and poverty, impact our mental health greatly. We know that nature promotes social cohesion, helps us recover from pre-existing stresses or problems, protects us from future stresses, helps us concentrate and think more clearly¹⁴. With less nature in urban environments, there is less opportunity to recover from mental stresses¹⁵. Stress and mental health are becoming increasingly common, with depression (and related illnesses) predicted by the WHO to become the greatest source of ill-health by 2020. It is said to cost Britain around £77 billion a year¹⁶. This huge burden could perhaps be improved by industrial policies for urban design and renewal that incorporate green spaces, allowing nature to have positive benefits on health; they should be seen as a fundamental health resource.

Active engagement with nature

‘For a new generation, nature is more abstraction than reality. Increasingly, nature is something to watch, to consume, to wear – to ignore.’¹⁷

Journalist Richard Louv has recently proposed a term that has resonated with many people: Nature Deficit Disorder. This is not a ‘medical’ diagnosis, but does refer to the ill effects of people’s separation from nature¹⁸. It is reported that 11-15 year olds in Britain spend about half their waking lives in front of a screen¹⁹. Today children choose to play on an iPad rather than in the garden; fewer than one in ten children regularly play outdoors. This sedentary, indoor lifestyle may be having serious consequences on children’s’ health. A major decline in children’s’ cardiorespiratory fitness has been noted, along with a rise in vitamin D deficiency. Numerous solutions have been proposed to help combat this; studies have shown that young people’s connection to nature and their holistic wellbeing are increased after a wilderness camp experience²⁰. Furthermore, by encouraging children to get involved in gardening, they significantly increased vegetable consumption, whereas nutrition education programs were insignificant²¹. Encouraging gardening would be one simple public health measure that may have huge benefits on the population.

Obesity is another increasing problem with more than half of all adults predicted to be obese by 2050. There is an explicit correlation between lack of activity and obesity as well as obesity-related ailments like diabetes; exercise is therefore known to be beneficial to our health. However, the benefits of exercising specifically in natural environments, as opposed to urban ones, is less well known. Compared with indoors, exercising in natural environments was associated with greater feelings of positive engagement, decreases in tension, anger and

depression, and a greater intent to repeat the exercise again²². Perhaps in the future, outdoor walking programs could be endorsed through ‘green prescriptions’²³ with participants more likely to repeat. Increasing the support for and access to a wide range of green exercise activities will produce huge public health benefits and avoid costs. A 10% increase in adult physical activity would benefit the UK by £500 million per year and save thousands of lives²⁴.

Our aging population means society increasingly has to deal with conditions of old-age. Declining cognitive and functional changes may necessitate entering assisted living or dementia residences; it is important that the most supportive, pleasant and cost-effective environments are found. Centres with therapeutic gardens have been proposed as one solution, with horticulture therapy/gardening activities aiding rehabilitation, a reduction of pain, improvement of attention, modulation of agitation, lowering of ‘as needed’ medications, antipsychotics and a reduction of falls²⁵. This has already been employed in the Eden Alternative Nursing Homes in Texas, with huge benefits including a 60% reduction in behavioural incidents. The costs of such nature-based treatments are expected to be much less than expenditure for drugs and surgery to achieve the same outcomes²⁶

To conclude, it is clear we need to develop more holistic approaches to incorporate nature into modern day life. It benefits us both on a personal and global level, affecting all aspects of our physical, mental and social well-being. Conserving natural ecosystems is crucial, as is ensuring those living in urban environments have access to nature and thus exist in partnership.

¹ WHO | Constitution of WHO: principles [WWW Document], n.d. . WHO. URL <http://www.who.int/about/mission/en/> (accessed 3.31.17).

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