

Health and the role of nature in enhancing mental health

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Health and the role of nature in enhancing mental health

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Definition

Health has been conceptualised in countless ways either as normality, as the absence of disease, as equilibrium, as functionality, as fitness, as resilience, as thriving, as a right, or as a resource. In 1948, the World Health Organization (WHO) adopted a definition of health as a ‘state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity’. In 1968, the WHO expanded their definition by adding: ‘to reach a state of complete physical, mental and social wellbeing, an individual or group must be able to identify and to realize aspirations, to satisfy needs, and to change or cope with the environment. Health is, therefore, seen as a resource for everyday life, not the objective of living.’ This has become one of the most widely used definitions of health as it alludes to three key (and interdependent) domains of health: physical, mental, and social.

While ‘complete’ health seems unrealistic to achieve, this is relative to social, emotional, and psychological circumstances of the life course. For example, people with chronic conditions and disabilities can still be considered healthy if they can function effectively, fulfil their needs, and be resilient to major stresses (Bircher & Kuruvilla, 2014; Huber et al., 2011).

Synonyms

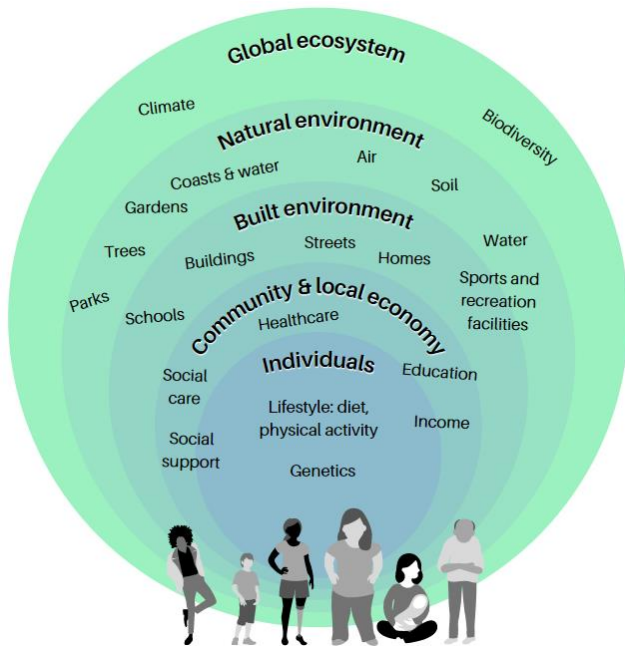
Wellbeing, Mental Health, Physical Health, Social Health, Urban Green Infrastructure, Nature

Determinants of health

Creating resilient regional and urban futures is dependent on a population that is in good physical, mental, and social health. There is also recognition that the manner in which we design, build, and inhabit our communities, and how we engage with nature, have deep impacts on our wellbeing (Frumkin et al., 2011; Roe & McCay, 2021).

Physiologically, an individual’s health is determined by their physical cells, organs, genetics, and biochemical processes, alongside the availability of water, nutrition, oxygen, and shelter. Yet health is not a purely physical function. Human health and well-being are also influenced by an individual’s behaviours and lifestyle as well as broader socio-economic, political, cultural, and technological structures (Lovell, 2018). The wider determinants of health are embedded at all scales of built, social, and natural environments (Barton & Grant, 2006; Dahlgren & Whitehead, 1991). From the global climate to soil quality, from street design to social care, health is determined by a nested variety of factors (Figure 1).

Figure 1 - The determinants of health (adapted from Barton & Grant, 2006)



The places in which we live and work are planned, designed, and built in a way that is increasingly associated with rising incidences of cardiovascular disease, chronic stress and anxiety, and social isolation (Barros et al., 2019; Rautio et al., 2018; Sallis et al., 2020). According to the Global Burden of Diseases and Injury study, mental and addictive disorders affect more than 1 billion people and are responsible for 19% of all years lived with disability in 2016 (Naghavi et al., 2017; Rehm & Shield, 2019). Moreover, the burden of mental diseases may be underestimated because even though mental disorders are not often listed as causes of mortality, they are associated with higher mortality rates and lower life expectancy than the general population. Conscious efforts need to be made to use multi-sectoral expertise to create places and communities that promote good health and prevent ill health.

On the scales of the regions, cities, neighbourhoods, and even streets, nature can have beneficial health impacts. Places can foster good health by promoting restoration from stress and attentional fatigue, or they may be intended to heal specific illnesses (Roe & McCay, 2021; Townsend et al., 2018; World Health Organization, 2016). However, as the global population is increasingly concentrated in urban areas, direct nature experiences are decreasing in quality and quantity for many people (Bratman et al., 2019; Soga & Gaston, 2016).

While the physical, mental, and social dimensions of health are not easily separable, this entry focuses on mental health and the role that nature can play to enhance this. Mental health is defined by the WHO (2004) as a state of wellbeing in which individuals can realise their own potential, can cope with the normal stresses of life, can work productively and fruitfully, and are able to make a contribution to their community.

The benefits of nature on mental health

There is strong evidence for the benefits of nature on mental health (see Bratman et al., 2019 for a review). Though not medically linked to disease states and mortality, exposure to nature is associated with improved health-related outcomes including physical activity, social contacts, stress physiology, emotional wellbeing, and cognitive capacity. The strongest consensus is around the association between nature experience and increased psychological wellbeing, a reduction of risk factors for mental illness and a lowered burden of mental illness.

Table 1 highlights the range of impacts of nature that have been demonstrated in various contexts. The principal pathways through which nature contributes to health can be conceptualised in three domains: reducing harm,

restoring capacities, and building capacities (Markevych et al., 2017). These domains operate individually as well as in complementarity with each other.

Table 1 - Evidenced impacts of nature on mental health

Pathway	Impact	Context	References
Reducing harm	Mental health protection	Nature exposure during childhood acts as a buffer for mental health problems in adulthood	(Cherrie et al., 2018; Engemann et al., 2018; Thygesen et al., 2020)
	Management of mental illness	Symptom reduction of mental health problems (eg ADHD and PTSD)	(Bettmann et al., 2021; Faber Taylor & Kuo, 2011; Ohly et al., 2016)
Restoring capacities	Emotional wellbeing	Reduced depression and anxiety, improved mood and self-esteem	(Chalmin-Pui, Griffiths, Roe, Heaton, et al., 2021; Lehberger et al., 2021; Marselle et al., 2020)
	Cognitive health	Increased mental alertness, memory recall, productivity, reduced cognitive decline	(Besser, 2021; Moss et al., 2017; Van Hedger et al., 2019; Yin et al., 2018)
	Improved stress regulation	Improved and healthier indicators of physiological stress such as salivary cortisol, skin conductance, and Heart Rate Variability	(Chalmin-Pui, Roe, et al., 2021; Kondo et al., 2018; Shuda et al., 2020; Souter-Brown et al., 2021)
Building capacities	Social wellbeing	Place attachment, place identity, increased social interaction, increased altruism	(Chalmin-Pui, Griffiths, Roe, & Cameron, 2021; Jennings & Bamkole, 2019)

Human interaction with nature can be divided into two distinct experiences: those with active contact such as gardening or another activity in a natural setting; and those dealing with more passive interactions such as the view from an office window (Brown & Grant, 2005). Mechanisms underlying positive effects include Attention Restoration Theory (Kaplan & Kaplan, 1989), Stress Reduction Theory (Ulrich et al., 1991), prospect-refuge theory (Appleton, 1975), flow theory (Csikszentmihalyi, 1990), and the human brain–gut–microbiome axis (Allen et al., 2017).

The importance of multifunctional green spaces

Nature in urban, peri-urban, and rural areas exists in many different forms, sizes, on public and private land, and with different functions. Mental health benefits may be accrued from a diversity of accessible greenspace. The most common forms of green spaces are: residential gardens, public parks, allotments, community gardens, botanical gardens, green rooftops, green walls, pocket parks, rain gardens, street trees, road verges, school gardens, river banks, urban farms, urban forests, and wetlands. All of these are important assets for our global ecosystem as well as for more local built and natural environments.

The composition of those spaces, and how they are managed, can have a significant environmental impact (Cameron et al., 2012). In designing and integrating green spaces with the existing built environment, initial criteria to consider include: accessibility, (perception of) safety, shared spaces and functionality, physical characteristics of the area, microclimate, and planting composition.

The drivers determining planting composition choice should go beyond the traditional considerations of cost, suitability for physical survival on site, and ornamental appeal. There is an increasing understanding of the

capacity of plant species (and an overall planting mix) to simultaneously provide multiple other benefits (Blanusa et al., 2019; Cameron & Blanusa, 2016). This includes the potential of a green space to support biodiversity, absorb/reduce noise, improve air quality, help with water attenuation and localised cooling. On an individual botanical and physiological level, plant species can vary greatly in the extent of ecosystem service they provide (Cameron & Blanusa, 2016). On a garden scale the biggest environmental benefit is likely achieved by increasing overall green cover, maximising species diversity, and using large-stature and perennial species.

Residential gardens as an example of multifunctional green spaces

Gardening is a common leisure activity around the world and thus can have multiple roles and meanings for gardeners. Residential (domestic, private) gardens are an important example of multifunctional green spaces as they are the most readily accessible green spaces for residents, with an estimated 88% of households in Great Britain having access to a private or shared garden (Office for National Statistics, 2020). Although small in size individually, the 24 million residential gardens in Great Britain make up a combined area equivalent to approximately 30% of the total urban built-up area (Office for National Statistics, 2018). The provision and extent of domestic gardens have also been studied in other national contexts, including in Romania (Badiu et al., 2019), Germany (Wellmann et al., 2020), India (Balooni et al., 2014), Ecuador (Finerman & Sackett, 2003), Chile (Reyes-Paecke & Meza, 2011), South Africa (King & Shackleton, 2020), Belgium (Notteboom, 2018), and Spain (Garcia-Garcia et al., 2020).

Research has demonstrated the essential role of private gardens in delivering natural capital that improves human health and wellbeing. This benefit is independent from the motivation to garden, which could be for leisure, health, professional, creative, or maintenance reasons (Chalmin-Pui, Griffiths, Roe, Heaton, et al., 2021). Gardens with more vegetation are associated with better physiological and psychological stress regulation (Chalmin-Pui, Roe, et al., 2021).

Incorporating gardens into the public health landscape

Green spaces can become assets and resources in a public health system that prescribes nature and nature-based activities to individuals as part of their health and social care. On a national, regional, and city scale, residential gardens could provide a public health benefit by helping people cope with and recover from mental ill-health, and also to keep the general population well (Cameron et al., 2012). ‘Green social prescriptions’ can be tailored to specific needs for the treatment of ill-health or in the context of preventative measures. This could include nature walks, community gardening, or biodiversity conservation activities. The equitable provision of green spaces close to where people live is critical to sustaining a resilient and healthy population.

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