

Green space, psychological restoration, and health inequality

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In today's *Lancet*, Richard Mitchell and Frank Popham¹ report on health inequality as moderated by the degree of access to parks and other green spaces near the home. They divide people in England who were younger than retirement age into four income deprivation groups, and five groups according to their access to green space. Looking at mortality data for 2001–05, these researchers found that the populations with the most access to green space had the weakest associations between income-related deprivation and both all-cause and circulatory disease mortality.

The natural environment affects human health through the provision of ecosystem services such as water purification, catastrophes such as tsunamis, and the harbouring of disease vectors, among other things. In recent decades, scientists have begun to research subjective aspects of the natural environment that are relevant to health, especially in urbanised societies. Our understanding of how the experience of nature might promote health has advanced through studies on environmental aesthetics, motivations for outdoor recreation, sources of residential satisfaction, and the affective and cognitive benefits of activities in gardens, parks, and wilderness areas.^{2–5} A distinct theme in this work is the value of natural environments for psychological restoration, such as psychophysiological stress reduction. This restorative value seems to stem from mutually reinforcing aspects of experiences of nature: distance from everyday demands, and possibilities for aesthetic appreciation and activity driven by interest.

Mitchell and Popham emphasise psychological restoration and physical activity to explain the health-promoting value of green space and its role as a moderator of health inequalities. They pay particular attention to mortality from circulatory disease, in which chronic stress and physical inactivity have causal roles. From the literature on nature and health, their conclusion is that

the evidence for stress amelioration seems more consistent than that for promotion of physical activity. They do have reservations, however—the paucity of evidence that restorative experiences in natural environments reduce the risk of death from circulatory disease contrasts with the abundance of evidence on physical activity as a protective factor. Yet they also acknowledge the intertwining of the mechanisms and the difficulty of assessing their relative contributions to circulatory disease.

In these last two points I see some general implications for efforts to mitigate health inequalities. The first concerns the evidential basis for action. The lack of evidence on protective values of restorative experiences in natural environments is similar to the lack of evidence for other stress-reduction approaches. In a review on the cardiovascular toll of stress, Brotman and colleagues wrote that: “Despite compelling biological plausibility, and evidence that relaxation techniques (such as meditation, yoga, and prayer) can transiently modify indices of autonomic activation, evidence to support the efficacy of behavioural and psychological stress reduction in the prevention of cardiac events is limited.”⁶ For restorative experiences in natural environments, as for relaxation techniques more generally, the paucity of evidence stems from a lack of well-controlled studies; it does not imply inefficacy nor disallow action to preserve and extend access to green space.

As for the intertwining of the mechanisms, the extent to which green spaces attract people for physical activity could have much to do with the availability of restorative experiences. The relative attractiveness of green spaces for walking varies as a function of the need for restoration, and the expectation of restoration in a given environment is positively associated with its attractiveness as a place for walking.^{7–9} Other data indicate that physical activity yields more beneficial emotional, cognitive, and physiological effects in natural environments compared with commonplace urban outdoor spaces.^{10,11} Research and practice that target health inequalities could also fruitfully look to other situations in which a restorative environment reinforces a salutary behaviour, as with enhanced neighbouring in residential green spaces.¹²

Mitchell and Popham offer valuable evidence that green space does more than pretty up the

Premise	Perspective		
	Stress	Coping	Restoration
Theoretical	Heavy demands can undermine adaptation	Readily available resources support adaptation	Adaptation requires periodic restoration
Practical	Interventions can eliminate or mitigate demands	Interventions can enhance availability of resources	Interventions can enhance opportunities for restoration

Table: Complementary perspectives on provision of adaptational support as basis for promoting health¹⁴

neighbourhood; it seems to have real effects on health inequality, of a kind that politicians and health authorities should take seriously. I also see in their study a more general contribution: the possibility that environmental supports for restoration can be systematically deployed to mitigate health inequalities. The final report of the Commission on the Social Determinants of Health¹³ calls for wide-ranging improvements in daily living conditions. Application of a restoration perspective on adaptation and health (table) and attention to the social ecology of stress and restoration¹⁵ can serve that call. As with the distribution of stressors and coping resources, time for restoration and the restorative quality of accessible environments are not equitably distributed.

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I declare that I have no conflict of interest.

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Medical-legal partnerships: transforming health care

Doctors, especially those who care for patients on low incomes, are frustrated that their patients' health is adversely affected by social determinants. For those patients with an acute or chronic illness, social determinants undercut the effectiveness of the burgeoning number of drugs and other treatments. Although this problem is usually considered a public-health issue, experience in the USA and abroad suggests a new way to transform the health-care system to address these social determinants: train lawyers to work as part of the health-care team to enforce the laws and regulations that are in place to protect health.

Many governmental programmes and laws, including programmes to supplement nutrition, housing subsidies, utility assistance, income support for the elderly and disabled individuals, regular and special education services, and health insurance, were created to ensure that basic needs are met. Unfortunately, safety nets are now so complex and unwieldy that many parts of the net are rendered inaccessible, and the disregard of

laws and regulations, such as those intended to protect against unhealthy environments, can result in adverse effects on health.¹

Individuals and families on low incomes cannot on their own successfully challenge the unlawful actions of a landlord, a governmental agency, or a school system, and therefore many unlawful—and unhealthy—situations persist. As a result, physicians are now looking to lawyers as colleagues to “treat” the social determinants of health, and medical-legal partnership is emerging as a key strategy to combat health disparities.² For example, in cases where a landlord ignores the pleas of a parent, nurse, or doctor to fix the leaky pipe that is causing mould that triggers a child's asthma, a lawyer has the skills to contact the landlord and cite the housing and sanitary codes that are being violated. Wrongful denial of benefits can be overturned. Typically, this type of legal intervention gets results for patients without the intensive and expensive litigation often associated with legal services. Thus medical-legal partnerships have introduced the concept