Urban nature, health and climate change – an overview of the evidence

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Urban Biodiversity and Health in the Face of Climate Change Workshop.
Oct 04-07 2016
Today

- Population level associations
- Green interventions
- Nuances in the evidence
  - Quality
  - Qualities
  - IneQualities
- Implications of climate change
- Use of and needs for evidence within existing decision making frameworks
Evidence syntheses

Department for Environment Food and Rural Affairs

NATURAL ENGLAND

Health Protection Research Unit in Environmental Change and Health

Evidence Statement on the links between natural environments and human health

March 2013

Introduction and scope
The evidence statement provides a broad overview of evidence on the links between natural environments and human health. It examines global, national, and local experiences, including ecosystem services and human health outcomes, in a comprehensive manner.

Findings

- Evidence indicates that environmental factors such as green spaces, water bodies, and natural landscapes can improve mental health and well-being.
- The presence of green spaces can reduce stress levels and improve mood.
- Access to natural environments can enhance physical health by promoting outdoor activities and exercise.

Purpose of briefing
This briefing aims to summarize key findings on the relationship between the natural environment and human health.

Exhibit
Natural England Access to Evidence Information Note EL0013

Links between natural environments and mental health: evidence briefing

Purpose of briefing
To promote greater understanding of the relationship between the natural environment and mental health.

Exhibit
Connecting Global Priorities: Biodiversity and Human Health

A State of Knowledge Review

Exhibit
Defra and the Convention on Biological Diversity

Exhibit
LWEC Living With Environmental Change

Exhibit
UNEP, Convention on Biological Diversity, and Global Health Organization
Health and wellbeing in Europe

Good health

Data source:
UK Census 2011

Bad health
Whether people are healthy or not, is determined by their circumstances and environment... factors such as where we live, the state of our environment... have considerable impacts on health... the more commonly considered factors such as access and use of health care services often have less of an impact.

World Health Organisation. *The determinants of health*

Just as environmental scientists describe the health of the earth as the capacity of a complex system to maintain a stable environment within a relatively narrow range, we **propose the formulation of health as the ability to adapt and to self manage**

Huber et al. *How should we define health?* BMJ 2011; 34
Natural environments and health in urban areas

- Population level associations between ‘greenspace’* and health

* majority of evidence is non-specific as to the features, characteristics, composition or structure of the environments
Relationship between the amount of greenspace in an area and rate of perceived poor health, derived from a regression model*,

*Model controlling for per cent of greenspace, employment deprivation, education, skills and training deprivation, barriers to housing and services, crime and income deprivation.
Greener urban environments and reduced rates of all cause mortality

Mitchell et al. The Lancet 372(965 0)
<table>
<thead>
<tr>
<th>Outcome</th>
<th>Reliability and quantity</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental health</td>
<td>Variable, lots</td>
<td>Consistent, positive</td>
</tr>
<tr>
<td>Obesity</td>
<td>Variable, some</td>
<td>Inconsistent</td>
</tr>
<tr>
<td>All cause mortality</td>
<td>Generally robust, some</td>
<td>Consistent, positive</td>
</tr>
<tr>
<td>Diabetes Type II</td>
<td>Generally robust, little</td>
<td>Consistent, positive</td>
</tr>
<tr>
<td>Cardiovascular disease</td>
<td>Generally robust, some</td>
<td>Consistent, positive</td>
</tr>
<tr>
<td>Pregnancy</td>
<td>Generally robust, some</td>
<td>Consistent, positive</td>
</tr>
<tr>
<td>Internal biome</td>
<td>Generally robust, very little</td>
<td>Consistent, positive</td>
</tr>
<tr>
<td>Allergies</td>
<td>Generally robust, little</td>
<td>Inconsistent</td>
</tr>
<tr>
<td>Cancer</td>
<td>Generally robust, very little</td>
<td>Inconsistent</td>
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<tr>
<td>Musculoskeletal</td>
<td>?, not found</td>
<td>?</td>
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<tr>
<td>Physical activity (population level)</td>
<td>Variable, lots</td>
<td>Inconsistent</td>
</tr>
<tr>
<td>Self reported health</td>
<td>Generally robust, some</td>
<td>Consistent, positive</td>
</tr>
</tbody>
</table>
Natural environments and health in urban areas

- Population level associations between greenspace and health
- However we don’t find the same effects across different populations, outcomes and places
Gender differences in relationships between urban green space and health in the United Kingdom. Male cardiovascular disease and respiratory disease mortality rates decreased with increasing greenspace for men but not for women.

Natural environments and health in urban areas

• Population level associations between greenspace and health
• However we don’t find the same effects across different populations, outcomes and places
• How we assess the relationship may be important too
Scale: biodiversity and good human health and wellbeing

- Evidence for inverse relationships at national level
- Evidence for positive relationship at local level
Is there evidence that we can improve health outcomes with urban ‘green’ interventions?

1. Greening the urban environment – population level effects
2. Greening specific spaces and places – targeted interventions for specific populations
3. Promoting use of existing spaces – can be targeted
4. Use of natural environments as a context or setting for health promotion
1+2. Greening the environment

Small amount of mixed evidence

Dutch study of increased greenspace within a community no effect on physical activity and general health

Several longitudinal studies show moving to a greener environment is associated with positive mental health outcomes

Supportiveness of different environment types is not yet well understood
Not all green is beneficial

Possible synergistic effect between pollutant concentrations and the health response to pollen.


Urban green space strategies may be paradoxical: while the creation of new green space to address environmental justice problems can make neighbourhoods healthier and more aesthetically attractive, it also can increase housing costs and property values.

3. Promoting use of urban natural spaces

• Physical changes
  o Paths and infrastructure
  o Access points
  o Outdoor gyms
  o Sensory gardens

• Social interventions
  o Promotional activities
  o Walking groups and park runs

Moderate amount of mixed evidence

Longer term, multi-component interventions most effective!

Not clear as to what works, for whom or in what circumstances
3. Promoting use of urban natural spaces

While dog walking is often key to getting people out in their local landscapes (most common reason cited) dogs can act as a barrier to non-dog owning people.

4. Use of natural environments as a context or setting for health promotion

Small amount of mixed evidence

(Green) Social prescriptions or as other health care setting/community based interventions

- Walking groups for recuperation
- Therapeutic gardening
- Wander gardens for people with dementia
- Woodland activities for poor mental health and social isolation
Nuances in the evidence

1. Quality
2. Qualities
3. ineQualities
1. ‘Quality’ of the environment

• The state (e.g. presence of litter) of the environment impacts on health


• Broader environmental degradation relates to health, especially mental health

1. ‘Quality’ of the environment: do more biodiverse environments = better health?

The synthesis of the results of 14 studies showed that there is some evidence to suggest that exposure to biodiverse environments may relate to better health and wellbeing in humans.

8 studies reported positive links, 5 inconclusive and 2 reported inverse relationships between biodiversity and good health and wellbeing*

*some studies reported multiple, opposing outcomes

2. ‘Qualities’ of the landscape

- Place - space
- Physical and social features of the place
- Some landscapes ‘afford’ more healthful opportunities than others
- How people respond to a landscape is variable and context dependant
2. ‘Qualities’ of the landscape: *Perceived* biodiversity relates to health

‘Objective’ aspects of the environment can be problematic as we found in our systematic review of biodiverse spaces

- One study found participant assessment of species (bird, butterfly and plant) richness was positively associated with self-reported wellbeing
- However they found no association between perceived and actual species richness, in general people are not very good at assessing biodiversity
"We all get on very well it’s quite a close band of people. There’s no hidden agenda; you don’t need to know who the people are or what they do. You just come [and] enjoy the day that’s the beauty of it." (O'Brien et al. 2010)
3. ‘ineQualties’ of (social) landscapes

Not everyone is able to make use of natural landscapes.

Certain groups including black and minority ethnic, low SES, women, older people over 65 and people with disabilities or long term illnesses less likely to use natural environment.

Historical and socio-cultural legacies can impact on how a community uses the natural environment.

Julie Hollenbeck. *Understanding factors influencing marine access in Miami*
Comfort in natural spaces relates to type and frequency of childhood experiences


Some find natural spaces to be frightening

3. ‘ineQualities’ of (social) landscapes

Shared cultural norms can influence whether a landscape is (perceived of being) healthy.

Hitching’s study of inner city workers use of local greenspaces found workplace practices determined how and when people used outdoor spaces.

Health impacts of climate change in urban areas

- Health related impacts of climate change likely to be particularly acute in urban areas
  - Heat islands
  - Increased temperatures
  - Higher levels of Ozone and other increased risk of asthma and heart attack
  - Changes to precipitation
  - Flooding

- Impacts will be compounded by demographic change, population movement and increasing inequalities

- Both flooding and drought linked with increases in mental health illnesses, including higher levels of depression and self-reported distress

- Health potential of urban greenspaces may be impacted by climate change outcomes (e.g. reduced levels of physical activity in higher temperatures)
Nature based mitigation of climate change

Greening our communities with trees and green infrastructure is one of the most important things we can do to reduce the risks of heat illness and flooding (UCL. Climate Action for Healthy People, Healthy Places, Healthy Planet)

Urban parks and green infrastructure help address air pollution and temperature regulation, particularly larger parks. Trees and other green infrastructure can reduce flooding.

Evidence suggests that current configuration and distribution is insufficient to mitigate impacts of climate change
Have we got the right kinds of evidence to inform decision making?

Image: LEAP
https://www.leap.uk.net/
Conclusions

We know that there are positive relationships between ‘natural’ environments and health in the urban setting.

But these vary according to the type and features of the place, the person experiencing it and their (and their community’s and culture’s) prior expectations and experiences.

Need more robust longitudinal intervention evidence to inform future activity in particular climate change adaptation and health promotion.
Thank you for listening!

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More
www.beyondgreenspace.wordpress.com

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All pictures © Karen Matthews
Key strategies

• More strategic cross-sectoral and -departmental working
• Ensuring sustainability and continuity of intervention activity
• Developing and piloting mental health, physical activity and obesity interventions in key target groups
• Improve the amount, quality, standards and accessibility of urban natural environments
• Health and environment in all policies

• Supporting the ongoing collation of robust, causal and explanatory evidence
• Effective evaluation, what works, and ‘mixed economies’ of evidence