



What Works briefing on natural environment based health interventions: Research briefing

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The UK faces considerable health challenges including rising rates of non-communicable diseases [1], chronic disability and persistent socio-economic related inequalities in health outcomes and their contributory risk factors such as low levels of physical activity. A growing body of evidence suggests that the use of natural environment is associated with better health outcomes and may potentially be of value as a resource in tackling some of our most intractable health issues [2, 3].

There is increasing interest as to how the natural environment could be utilised as a health promotion tool, setting or context in which to address the increasing burden of health problems. Many types of natural environment - from the National Parks, with their protected environments with high levels of biodiversity and culturally important spaces, to urban greenspaces, close to large populations offering spaces for physical activity and stress relief - could have a role in public health promotion or as a therapeutic setting.

As of yet there have been few attempts to draw together and synthesise evidence specifically relating to which natural environment based health interventions work, for whom, in what circumstances, and why. Similarly, there has been little effort to map provision, identify systems through which interventions can be most effectively delivered, or to identify cost-effective approaches. This report for Defra, completed in 2018, provides a scoping review of 'what works' in nature based health interventions.

Key findings

1. Nature based health interventions can be characterised according to 1) the nature of action, 2) the type of exposure to natural environments, 3) the type of health promotion, and 4) the 'stage' (upstream or downstream) at which they operate.
2. There is a considerable amount of activity across the UK which can be classified as nature based health interventions. Interventions are designed and delivered by a range of public, private and 3rd sector organisations from across the health, social and environmental sectors. Funding is diverse but generally short term and project based. There are some examples of activities commissioned by health and social care services.
3. Although the evidence base is limited, inconsistent and heterogeneous, findings suggest that certain interventions are effective in improving health, wellbeing and quality of life. Some

- interventions appear to result in little health change, though this may be related to limitations of the evaluations. Positive impacts appear to differ between social groups and settings/contexts.
4. The limited body of economic evidence suggests that interventions tend to be cost-effective. Mixed strategy interventions (e.g. those which involve creating and/or improving urban greenspaces with social promotional activities) embedded within wider systems of provision appear to be most effective. There is a danger that poorly designed and implemented interventions may exacerbate inequalities.
 5. Effective approaches to environment based health intervention design and delivery include: making use of theory based intervention design; building on best practice in formal public health intervention design and implementation; appropriate targeting of interventions; engaging communities in intervention design and delivery; flexibility in design and delivery; embedding interventions within wider provision; making use of behaviour change approaches; and settings based interventions.
 6. A systematic identification of cross-sectoral and departmental shared interests, and common drivers and institutional needs is necessary to help find synergies and facilitate the greater provision of nature based health interventions. Other key facilitators may include: greater governmental emphasis on public and preventative healthcare; collaborative leadership; development of a context for joint environment-health decision making; addressing competing priorities; and finding ways to sustainably support and fund activities in the long term encouraging growth and transferral.
 7. Further research and high quality evaluation is needed to improve our understanding of what works, for whom and in what circumstances, and to ensure interventions are effective and avoid harm. There is also a need to clarify how natural environment based health interventions could be best used to respond to current priorities within the health and social care system.

Background

This briefing summarises the outcomes of Defra funded scoping synthesis which sought to contribute to the process of identifying 'what works' in natural environment based health interventions. The review focused on 'natural environment based health interventions'; environment based activity which aims to promote good health and prevent poor health (at a population, community or individual level), or in relation to the use of the environment as a therapeutic setting. The review aimed to assess:

- Evidence of what works in natural environment based health interventions, focusing on:
 - What works in a) enhancing the health potential of urban greenspace, b) for deprived and disadvantaged groups, and c) in relation to children and young people's nature based physical activity.
 - What works in design, delivery and evaluation of natural environment based health interventions.
- The extent and nature of delivery, key funding mechanisms, and achieving sustainability.
- Examples of good and promising practice in natural environment based health interventions.
- What is needed to improve our understanding of what works in nature based health interventions.

The review did not focus on some of the more indirect pathways between environments and health interventions such as reduction of heat island effects, air pollution, pollen and allergens, or, through improving water quality or flood resilience.

This briefing is aimed primarily at governmental (national and local) departments or bodies with responsibility for, or an interest in the development and use of natural environment health interventions.

Characterising natural environment based health interventions

A brief survey of natural environment based health interventions showed that there is a considerable amount of activity. Interventions are supported and funded through a variety of mechanisms and partnerships. The plurality of natural environment based health interventions makes systematic characterisation difficult, however most interventions can be described using the following typology:

1. *Nature of action*: **Natural environment interventions** – where new spaces are created or, existing spaces are linked, modified or improved. **‘Built’ environment interventions** – where ‘man made’ elements are created, modified etc. to improve the health potential of a natural environment. **Social Interventions** – where efforts are made through social activities (e.g. not through physical changes to a space) to improve the health potential of a natural environment. **Organisational actions** – where organisations (at all levels and types) might shift their practices, policies and strategies to make use of, or take account of the potential of the natural environment to improve health outcomes.
2. *Type of exposure to the natural environment*: **Remote exposure** – where natural elements of the environment are present or visible but that the individual is not ‘in’ the natural environment. **Incidental exposure** – where activities take place in natural environments but the activity is not specifically focused on the natural environment. **Intentional use** – where the natural environment is more than just a setting but is fundamental to the activity.
3. *Type of health promotion*: **Population level health promotion** – where actions are taken which create the conditions in which a population’s health might be improved. A population can be at a national scale or more local (for this definition it is used to refer to a spatial population, and does not refer to demographic populations or populations who share a certain characteristic such as a specific health issue). **Targeted prevention** – where activities are specifically designed to address a specific health outcome or engage a specific community (e.g. according to a health condition or demographics - older people, children etc.). **Therapeutic** – where activities are provided to specifically improve health status following, to prevent or manage a health problem such as a heart attack, mental health breakdown or injury. Examples might include therapeutic gardening, or park based exercise for physical strength.
4. *Stage*: **‘upstream’** or **‘downstream’** interventions.

What works in natural environment based health interventions

Urban greenspaces

There is some evidence which shows that creating or increasing greenspaces and improving (physical) accessibility, improving the quality or features of urban greenspaces, and that promoting, encouraging or facilitating the use of urban greenspaces have some positive impacts to a number of health outcomes. The evidence base is limited, inconsistent and heterogeneous. Positive impacts appear to differ between social groups. Mixed strategy interventions (e.g. those which involve creating and/or improving urban greenspaces with social promotional activities) are the most effective. There is a danger that poorly designed and implemented interventions may exacerbate inequalities.

Deprived and disadvantaged groups

Evidence shows that there are effective interventions that can help overcome the barriers many deprived and disadvantaged social groups face in using and benefiting from the natural environment. Many effective approaches build on behaviour change techniques or seek to address the socio-cultural or internalised barriers to use of natural environments. Interventions which increase the availability (greater provision of greenspace near the home, accessibility (including safe routes to spaces, affordable transport), and infrastructure (including toilets, cafes) of good quality natural environments have been shown, in some cases, to be effective in increasing use amongst deprived and

disadvantaged groups and potentially improving health outcomes. There is also a growing body of evidence that suggests that the therapeutic, and the highly targeted use of the natural environment as a setting for health interventions, particularly for those with poor mental health and/or facing social isolation, are effective in improving outcomes such as wellbeing and quality of life. Highly targeted programmes of intervention, embedded within wider systems of provision appear to be most effective.

Children and young people's physical activity

There is a growing body of evidence which has examined whether interventions to facilitate and encourage children and young people's physical activity in natural environments is effective. This evidence has demonstrated that the natural environment is an important facilitator, setting and determinant of their activity and that there are a number of intervention approaches which are effective in increasing use. Key approaches include: environmental modifications to encourage the types of activities children and young people are interested in; social interventions to address barriers to use, normalise usage, and change perceptions; and settings based approaches to embed nature based physical activity into, for example, the school day. Mixed strategies are most effective. Co-creating interventions with key stakeholders, including children and young people themselves, is crucial.

What works in nature based health intervention design, implementation and delivery

Project evaluations and reports provide some indications of effective approaches to intervention design, implementation and delivery. Key evidence based factors include: making use of theory based intervention design; building on best practice in formal public health intervention design and implementation; appropriate targeting of interventions; engaging communities in intervention design and delivery; flexibility in design and delivery; embedding the intervention within wider provision; making use of behaviour change approaches; and settings based interventions.

The outcomes of, and lessons learnt through existing provision, such as the Nature4Health programme, based in the Liverpool region and led by the Mersey Forest [4] and the four case studies examined for this review (Gardening activities; Birmingham Active parks; Forestry Commission Scotland's Branching Out programme; and Natural Resources Wales' Come Outside! Programme) provide helpful guidance on best practice in intervention delivery. The Nature4Health team identified the following factors as contributing to the success of their interventions [4]:

- Tailoring activities to fit with the local culture
- Projects cannot simply have a physical health focus – social interaction is critical
- Effective monitoring and evaluation is crucial, to inform future delivery and refine projects
- There is a need to be proactive and flexible in delivery

There is currently very little information on the cost-effectiveness of interventions, however the limited available evidence suggests that interventions tend to be cost effective.

Improving our understanding of what works in natural environment based health interventions

If the growing interest and demand for good quality, robust natural environment based health interventions is to be met there needs to be further research and evaluative activity.

This review (and others [5-7]) has demonstrated that there is a wealth of natural environment based health intervention activity taking place across the UK despite the structural issues regarding the funding, commissioning and sustainability of natural environment based health interventions, issues which are partly related to, and contribute to, the lack of a good quality evidence base. The disparate, inconsistent, and somewhat poor quality evidence base indicating what works, for whom and in what

circumstances, is a result of a number of factors including the relatively high costs (in terms of money, time and expertise) of intervention research and evaluation. However, shifts in approaches to public health research and harnessing of opportunities to gather good quality, transferable evidence could address this deficit.

The following factors may help improve our understanding of what works in natural environment based health interventions: promoting the value of and supporting good quality intervention evaluations; producing evidence of 'good practice' and of what works at all stages of intervention design and delivery; clarifying the impacts of 'simple' interventions within complex systems; making greater use of theories of change and theory mapping; and exploring how to design and use interventions to respond to specific health sector needs.

Practitioner, policy and decision makers' perceptions

A workshop with a range of policy, practitioner and delivery bodies identified a number challenges and opportunities to achieve more sustainable and effective nature based health intervention activity.

There was consensus that there is a lack of leadership on nature based health interventions within national and local Government. Real leadership is coming from the grassroots level. Any potential leadership solution will be collaborative and will involve public, 3rd and private sector. Additionally, leadership will need to come in different guises and operate between and within different sectors.

The identification of cross-sectoral and departmental shared interests, drivers and needs is crucial and would help find synergies and facilitate activity. There was a concern that there is a lack of a coordinated voice which can help steer where intervention funding, as well as research and evaluation resources, are directed.

Although the necessary (structural) conditions for effective policies and practice are not clear, it was suggested that actions such as shared health and the environment portfolios within government (national and local) would mean someone has responsibility to identify problems and opportunities and to make links. Putting the achievement and maintenance of a healthy population on the same footing as achieving and sustaining economic growth, and the adoption of Health in All Policies (and the complementary Environment in All Policies) would help direct dedicated resources from a high level.

Although the strength of the evidence was questioned by some, most argued that the trend of the evidence is supportive and that many sectors, including some in the health sector, are actually persuaded of the value of nature based health interventions. The key question for most was, where is the evidence good enough to support activity? Key actors are constrained by a lack of evidence which indicates what to do, where and how.

Conclusions

Despite the huge range of ongoing activity and increasing interest and demand, there is still a relatively limited body of evidence as to what works in nature based health interventions. However, the existing evaluations and project reports suggest that there are examples of natural environment based health interventions which are effective in achieving a range of different outcomes for different social groups and in different contexts. There is also evidence of effective approaches to intervention design, delivery and implementation. However, again this evidence is patchy and has yet to be brought together, using systematic methodologies, to inform future intervention design and delivery, and in relation to the transferal of programmes between contexts and populations. Further research would help improve our understanding of what works, for whom and in what circumstances. Many of the key challenges to effective sustainable practice relate to the lack of leadership, constrained financial context, and to the lack of focus on and direction of resources to preventative health.

Useful next steps might include:

- Identifying and focusing on a small number of key issues that are of concern to the health service.
- Increased coordination and commonality between those involved in nature based health interventions (of any kind) and the aims of their strategies, delivery and evaluative activities.
- A focus on mitigating competing priorities, such as the need to achieve higher density of housing for planners and developers.
- Harnessing the opportunities presented by the many initiatives and organisations, such as the Sustainable Transformation Plans, NHS Sustainable Development Unit and the Town and Country Planning Association (TCPA), which are working to shift and balance priorities within specific sectors and systems.
- Finding more sustainable ways in which to fund, sustain and deliver interventions.

About the project

An initial scoping review of the evidence and was undertaken December 2016–April 2017. The review was not systematic, in that it is not intended to be exhaustive, the quality and reliability of the evidence used not assessed, and no formal process of meta-analysis was used. Informal, iterative searches of the academic databases and of the grey literature were performed. A request for evidence was disseminated using multiple channels and expert practitioners were consulted.

A range of evidence types were sought and used. This was a short-term project thereby limiting the extent of the evidence gathering, the authors are aware that there is a large body of expertise and knowledge held locally which has not been fully accessed and incorporated into this report. An expert practitioner and decision maker workshop was held in London in November 2017 to share initial findings and identify the next steps.

The review focuses on evidence and practice relating to the UK context but does incorporate evidence relating to elsewhere in the world where relevant.

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