

# What makes nature-based interventions for mental health successful?

This paper looks at the work undertaken to provide nature-based interventions in the south west of England under the project 'A Dose of Nature'. It summarises the evidence for health and wellbeing benefits of regular engagement with natural outdoor environments, presents the findings of the project, and discusses some of the key factors involved in the development of successful nature-based interventions.

## Introduction

Throughout the UK there is increasing interest in the relationship between natural outdoor spaces and human health and wellbeing (Bragg and Leck 2017). Some of this work involves using nature as the setting for health interventions, for example outdoor exercise programmes. Other initiatives position nature explicitly as the source of betterment, for example ecotherapy programmes. In all examples nature is understood to hold therapeutic potential, and the relationship between experiencing nature and being healthier the focus.

In particular there has been a surge of interest in nature-based interventions for mental health problems, as there is now strong evidence that people with good access to natural environments are more likely to have better mental wellbeing (Mitchell et al 2015, Lovell 2016).

There remain many countries that have inadequate community mental health care provision; however the resources needed for nature-based interventions for mental health

can be found in every country. The potential opportunities for capitalising on this service delivery model are vast. This paper: outlines the evidence for nature-based interventions for mental health and wellbeing; describes how one service - A Dose of Nature - was developed and delivered; considers likely patient benefits from this sort of intervention; and outlines key challenges and factors that ensure success.

## **Evidence summary**

Broadly, the evidence for a link between mental health outcomes on the one hand, and engagement *with*, access *to*, and interventions *within* nature on the other hand, is large, with variable reliability but with a consistent and positive trend (Lovell 2016). Some of the most robust evidence relates to general wellbeing (see for example the evaluation of the UK's Walking for Health programme (Marselle et al 2014). Further studies demonstrate how these gains in wellbeing may accrue via improvements against the following factors: affect and cognition (Bratman et al 2015); mood restoration (van den Berg et al 2003); attention, anger, fatigue and sadness (Bowler 2010; Thompson Coon et al 2011).

Evidence for specific mental health conditions is less extensive, although there are studies showing a positive impact of being in natural environments upon depression (Berman et al 2012), anxiety (van den Berg and Clusters 2011) and, by improving concentration, upon Attention Deficit Hyperactivity Disorder (van den Berg and van den Berg 2011).

What has been missing from these accounts to date are detailed case studies of nature-based interventions that can shed light upon questions concerning dose, replicability (at scale and in different environments), access, cost-effectiveness, and the potential to

address mental health inequalities. These are complex issues, and A Dose of Nature was set up to begin the process of providing the kind of service that can support such studies.

## **A Dose of Nature**

From Spring 2015 to autumn 2016, eight different nature-based interventions for health and wellbeing were run in Bristol, Exeter, and different locations throughout Cornwall, all in the south west of the UK. The work began with lengthy process of engagement with doctors, mental health professionals, patients, environmental managers and those able to run interventions. It allowed for a model to slowly emerge of what kind of nature-based intervention was both practicable and attractive to all.

The intervention groups had common features. Each was a partnership between health staff working in primary care (mostly doctors in general practice, as well as practice nurses), local organisations owning and/or managing natural assets, and practitioners able to run the intervention itself. The interventions ran for twelve weeks, and involved small groups of participants (typically four to ten). Each weekly session was two to three hours long. Simple wellbeing questionnaires were completed before and after the course. The time was spent outside, in places defined as rich in natural beauty and/or biodiversity. The courses were free to participants.

There were also a number of variable factors involved in these groups. The majority of participants were referred onto the courses, but some groups also included self-referred participants. Whilst all of the groups involved some sort of physical activity and some sort of activity focusing on engaging with natural phenomena, this allowed for a variety of detail. Some groups focussed on walking, some had a silent or meditative element. Some

involved activities aimed towards conservation outcomes, such as managing woods.

Another major source of difference within the overall programme was the natural environment itself. Inevitably this varies across locations. Some were based in woodland areas, some in coastal zones, some in areas of countryside dominated by agriculture, and others in greenspace in and around urban settlements.

At the beginning of the programme the general objective, following the logic of knowledge exchange work, was to increase interest in the topic in all relevant groups, and to build up the capacity in the system required to support further work and identify subsequent research questions. As a result at first no specific mental health diagnosis was the focus of the work; doctors were able to make a referral simply because they felt that such an activity would be good for that individual. At this stage it was not yet the intention to replace existing clinical care options (for example, the prescription of antidepressants or a referral to community mental health services); only to increase choice, both for patients and referrers. As the project developed the referral process tightened to focus on patients with a diagnosis of mild to moderate depression and/or anxiety (at least, in the mental health sphere; we are continuing to address the relationship between physical inactivity and mental health as the service expands, and thus on physiological parameters such as cardiovascular health). In the final patient cohorts all referrals were based on a diagnosis of depression, from mild to severe (i.e. referrals from both primary care and clinical psychiatrists within the secondary care system).

## **Benefits**

The impacts on patient-participants involved in A Dose of Nature have been numerous. These include mental health gains as well as social and financial benefits. The project saw 64 patient referrals, from which have resulted:

- 48 patients completing a programme of 10 to 12 weeks
- an average cost per patient of £317.33
- an average increase of 69% in self-reported wellbeing (using the Warwick and Edinburgh Metal Well Being Scale)
- two new self-organised support groups
- at least four patients signing up for further training and/or volunteering activities
- at least two patients reducing, or expecting to reduce, prescribed medicines.

We have measured considerable improvements in mental wellbeing. Participants in A Dose of Nature programmes have indicated significant improvements against depression and wellbeing parameters. Patients have described improvements in mood and reductions in anxiety. Typical statements from service users were as follows: “it’s been a fantastic experience for me and I do hope in the future that instead of being a pilot scheme this will go on to become a more permanent thing” (Patient, Stennack Health Centre); “I suffer with mental health issues and it has helped me enormously; its kind of like a breath of fresh air in a way, you see things differently and you forget your worries for the day, which is good. Talking to others who have gone through similar experiences such as myself has also helped me very much with my mental health. All round it's been a definite benefit” (Patient, Bodriggy Surgery).

Participants have also discussed a number of changes that relate to their social skills. These include: greater confidence in social settings; improved sense of individual worth and of agency; learning new skills and knowledge; and the formation of new friendships.

Clearly, the social dimension of a nature-based intervention group are important in terms of group dynamics and thus in terms of their effect upon outcomes, and a question for the future is to what extent the social, as opposed to the natural environmental, dimension can be teased out and examined in terms of intervention efficacy. In the meantime however, it should be noted that with this kind of intervention, a 'social prescription', benefits can deepen only over time; for example a number of groups have continued to self-organise and meet after the twelve week 'official' intervention has ended.

Referrers have also responded positively to the pilots; every simple referrer into the scheme (n = 12) stated that they saw benefits to their patients and wished to be able to continue to be able to send people to the service, or a similar extension.

Case studies have shown that participating in a nature-based intervention can result in personal financial gains, both from avoiding costs (for example, for prescriptions) and from entering the employment market (Vardakoulas 2013). The experience of A Dose of Nature seems to bear this out, as participants have gained new skills, taken up voluntary positions, and expressed confidence in being able to reduce their medication in due course.

As well as individual patient benefits, it is worth considering the larger potential impact on health economics. The cost of mental health problems in the UK are extraordinarily huge, estimated at £70 to £100 billion per annum, or 4.5% of GDP (Bowler et al 2010). Although the analysis for A Dose of Nature has not been carried out, Mind's "Ecominds" programme - a more extensive programme of similar and varied nature-based interventions - resulted in an average saving per participant of £7,082, via reduced NHS costs, benefits reductions and increased tax contributions (Vardakoulakis 2013).

## **Key factors in developing successful nature-based interventions**

The experience of developing and delivering A Dose of Nature has raised a number of key factors affecting success.

*Engagement.* Unless all key groups are brought together to discuss the intervention at an early stage, then the work will likely fail. All participants - patients, doctors, those running the groups and those owning and managing the land that is being used for this purpose, must have confidence in the programme and in each other. This takes time. It requires a co-ordinator who is able to speak (at least) two different 'languages': the language of health care and practice; and the language of nature and environmental engagement.

*Flexibility.* The issue of language is important because as the project develops it is important to jointly co-design, co-own and co-deliver the intervention. Health professionals are liable to see the work largely or wholly in terms of health benefit to patients and reduced health costs. There is an inherent risk of devaluing the work if this happens. Similarly, conservation or environmental management partners might see the work only in terms of potential ecological gain, or even as a way of boosting their income. Again, this can derail the project. It is important to identify mutual benefits, questions that both sides of the equation are interested in answering, and practical solutions that meet everyone's needs (for example timings, activities, dates, bad-weather options and transportation).

*Managing the introduction.* How does one best take a patient from a clinical setting to a non-clinical, social one? How does one minimise the rate at which patients fail to engage, or fail to complete the course? The initial referral, the introduction to the idea, is vital. Designing

a nature-based intervention requires a lot of thought about the words and images used in printed material, whether the intervention organiser will contact the patient directly or not, and whether a third party referral coordinator will be used. The aim should be to put the patient-participant at the heart of this process so that it is clear from the start that the work is focused on meeting their needs. At the same time there is a risk that patients expecting traditional medical treatment might feel they are being offered something that is a cheaper, second-best alternative instead; the referral process needs to emphasise that a nature-based intervention - or any form of social prescription - is a high quality option, run by professionals with adequate training and oversight, but that it is additional to, not instead of, clinical care. A social prescription is not a clinical intervention.

*Practitioner skills.* People leading nature-on-referral schemes need to: be able to explain, describe, or otherwise animate nature so that it is made relevant and engaging to participants; be able to manage simple group dynamics; and pass a set of locally determined criteria (typically including insurance, driving skills, criminal background checks and first aid certification). These are local groups rooted in the community, delivering non-clinical work. Advanced psychological or nursing backgrounds are not necessary; practitioners come from different backgrounds, including clinical ones but also from psychotherapy, education or community engagement.

*Timings.* Some of the Dose of Nature groups waited to bring together a group of participants, and this meant waits of up to six weeks before the intervention began for some. Other groups used a rolling model, with participants able to join and leave at different times. This was up to the practitioners, the referrer and the patients, but it can be noted that season and weather were largely irrelevant factors. In fact, some patients



described the greatest positive impact against feelings of depression as occurring during poor weather as the winter season became more advanced.

*Applicability.* As has already been said, the key ingredients for nature-based interventions are extremely common: a health system that is struggling under the burden of mental ill-health; a local natural environment of some description (nature-based interventions can occur in urban parks, farms, gardens or any common green space, as well as in relatively 'wild' spaces set aside for nature); and a community willing to work together to try new ideas and help each other. There is no evidence that a nature-on-referral intervention such as the one described in this paper has any greater or lesser impact whether it is developed in an urban or rural setting. With depression being a global pandemic, and with some form of 'green' or natural space being accessible even in the worlds biggest cities, at the very least the potential of such an approach is worth exploring internationally.

### **Next steps**

The work carried in A Dose of Nature is being carried forwards in two different but related ways. First, it will help inform an ongoing realist review (Husk et al 2016). This is a type of systematic review that will look at the different ways in which referrals occur within social prescribing initiatives; what works, for whom and in what circumstances? As nature-based interventions develop, this is an important area to address for the whole process to be successful.

Second, the author is currently working with Cornwall Council, alongside the local Health and Wellbeing Board, the Local Nature Partnership and the Local Economic Partnership, to deliver a NERC-funded project seeking to expand and standardise the referral of

patients onto nature-based interventions, and make them available across the entire county. More information can be found at [www.adoseofnature.net](http://www.adoseofnature.net)

Declaration of Interest: the author manages the A Dose of Nature project online. He has a background in: psychotherapy; knowledge exchange between researchers and the environmental and health sectors; ecology; and public engagement in science.

## References

Bowler D et al (2010) A systematic review of evidence for the added benefits to health of exposure to natural environments. *BMC Public Health* 10: 456.

Bragg R and Leck C (2017) Good practice in social prescribing for mental health: the role of nature-based interventions. Natural England Commissioned Reports, Number 228.

York. Accessed at: <http://publications.naturalengland.org.uk/publication/>

[5134438692814848](http://publications.naturalengland.org.uk/publication/5134438692814848)

Bratman G, Daily G, Levy B and Gross J (2015) The benefits of nature experience: improved affect and cognition. *Landscape and Urban Planning* 138, 41-50

Husk K, Blockley B, Lovell R, Bethel A, Bloomfield D, Warber S, Pearson M, Lang I, Byng R, Garside R (2016) What approaches to social prescribing work, for whom, and in what circumstances? A protocol for a realist review. PROSPERO 2016:CRD42016039491

Available from: [http://www.crd.york.ac.uk/PROSPERO/display\\_record.asp?](http://www.crd.york.ac.uk/PROSPERO/display_record.asp?)

[ID=CRD42016039491](http://www.crd.york.ac.uk/PROSPERO/display_record.asp?ID=CRD42016039491)

Lovell R (2016) Links between natural environments and mental health: evidence briefing (EIN018). Natural England. Accessed at: <http://publications.naturalengland.org.uk/publication/5748047200387072?category=6159558569361408>

Marselle M, Irvine K and Warber S (2014) Examining group walks in nature and multiple aspects of well-being: A large-scale study. *Ecopsychology* 6 (3) 134-147

Mitchell et al (2015) Neighborhood environments and socioeconomic inequalities in mental well-being. *American Journal of Preventive Medicine* 49 (1) 80-8

Thompson Coon J et al (2011) Does participating in physical activity in outdoor natural environments have a greater effect on physical and mental wellbeing than physical activity indoors? A Systematic Review. *Environmental Science & Technology* 45 (5) 1761- 1772

van den Berg A and Clusters M (2011) Gardening promotes neuroendocrine and affective restoration from stress. *Journal of Health Psychology* 16, 3-11

van den Berg A, Koole S and van der Wulp N (2003) Environmental preference and restoration: (How) are they related? *Journal of Environmental Psychology* 23, 135–146

van den Berg A and van den Berg C (2011) A comparison of children with ADHD in a natural and built setting. *Child: Care, Health And Development* 37(3): p. 430-439

Vardakoulias O (2013) The economic benefits of Ecominds: a case study approach. NEF Consulting, London. Accessed at: <https://www.mind.org.uk/media/338566/The-Economic-Benefits-of-Ecominds-report.pdf>

