Nature prescriptions should address motivations and barriers to be effective, equitable, and sustainable

Equitable, effective, and durable solutions to address social determinants of health remain elusive and ever more urgent in the context of climate change.[1] Contact with natural environments, such as parks and forests, is associated with better health.[2] Enabling people to increasingly interact with nature is recognised by some health professionals as an option for addressing unmet health and social needs (eg, physical activity and connections with others).[3]

Seeking contact with natural environments for restoration of health is not new, but many people receive limited health benefits as they spend minimal time in nature. One way people are being encouraged to have more contact with nature—and for which interest is high in some countries, such as Australia—is via so-called nature prescriptions.[4] Nature prescribing is an accessible and low-cost adjunct to routine medical care, comprising written directives by health professionals for visits to natural settings either individually or in groups for recreation, relaxation, and reconnection.[5]

Although robust experimental, health-economic, and implementation-science-focused evaluations of co-designed nature prescriptions are in the nascent period of development and implementation,[5] early results are promising. Nature-prescription activities can lead to an increase in physical activity (especially walking) and reductions in depression, anxiety, and blood pressure.[6] However, as with other behavioural interventions, an exclusive focus on educating people about the scientific benefits of contact with nature without supporting access might be somewhat ineffective. Delivery of behavioural interventions that preferentially benefit people in more privileged societal positions could ultimately widen health inequities.

We propose that for nature prescriptions to be effective, equitable, and sustainable, interventions should be co-designed with people who use them or could benefit from using them, health-care providers, and experienced professionals who specialise in facilitating activities in natural environments (eg, accredited nature therapists and community gardeners). This co-design with key stakeholder groups is necessary to ensure that interventions are acceptable to intended beneficiaries, credible to those who are expected to recommend them, and achievable for those who deliver them.

Co-design of nature prescriptions should attend to differences in personal capacities that enable—and external barriers that inhibit—time spent in natural environments and the ways they intersect with variations in autonomous motivations for nature contact. Attending to these factors is crucial to maximise uptake and adherence.[3] Accordingly, we propose a four-quadrant, multilevel framework to inform the development of nature-prescription interventions (figure).

For example, a person might be receptive to a nature prescription but experience substantial barriers to interacting with natural environments. Access is not only influenced by availability, but also time scarcity, inclement weather, transportation, and even financial access—for example, entry or vehicle fees are charged by some national parks in Australia and Canada. Cultural and gender norms (eg, about being alone) and disability can also influence access;[7] planners have crucial roles in designing or redesigning more inclusive ways for everyone to engage with nature.

Furthermore, an individual might have a green or blue space nearby and experience few barriers to accessing nature but might have little motivation to spend time in natural settings for several reasons (eg, perceived risk of injury or concerns related to personal safety). Differences in types of motivation for behavioural change have long been recognised[8] but are under-researched for nature contact specifically. Unfortunately, not everyone will find the idea of a nature prescription

		Autonomous motivation for nature contact	
		High	Low
Barriers to nature contact	Low	Low priority: already regularly visiting nature or might do so with minimal encouragement or education	Personal focus: requires interventions to strengthen autonomous motivation for nature contact while ensuring no barriers emerge
	High	Contextual focus: requires interventions to reduce barriers while maintaining high levels of autonomous motivation	Multilevel focus: requires multifaceted interventions to increase autonomous motivation and reduce barriers to nature contact

Figure: **Four-quadrant, multilevel framework for defining nature-prescription interventions**

rewarding (ie, intrinsic motivation) or value it as part of their personal identity (ie, integrated motivation). Some people might not even recognise a green or blue space as an attractive alternative to an indoor gym for health improvement (ie, identified motivation).

Low levels of these autonomous motivations might potentially be due to a loss of direct, even lifelong, contact with natural and community-oriented settings that is the result of negligent city planning that obliterates green and blue spaces and their resident wildlife in favour of commercial interests, cars, and motorways. These conditions, which might lead to a so-called lonelygenic environment, are likely to disproportionately affect people living with socioeconomic disadvantage.[9]

Finding methods to remove barriers and strengthen autonomous motivation for contact with nature is crucial. Interventions that are focused on introjected and external (ie, controlled) motivations involving guilt or social pressure are not useful for sustained behavioural change after interventions and could undermine intrinsic motivation for nature contact.[8] Potential solutions include testing group-based and person-based activities and incorporating intrinsically motivating commitment devices (eg, temptation bundling)[10] that indirectly increase time in nature as a way to familiarise and refamiliarise individuals who feel disconnected from natural environments with the more-than-human world.

Our proposed framework emphasises the need to segment trial populations and supports the application of avant-garde study designs, such as a factorial experiment, that are capable of defining what intervention components maximise positive outcomes for which population while considering the challenges we have mentioned. Identifying the size of the population in each quadrant with representative surveys will help to define the scope for future benefit.

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