

Nature as a Community Health Tool: The Case for
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INTRODUCTION

Social and economic factors, health behaviors, and neighborhood conditions combine to significantly shape individual and community health.^{1,2} These social determinants of health (SDH) are the “conditions in which people are born, grow, live, work, and age... [that are] shaped by the distribution of money, power, and resources at global, national, and local levels.”³ Recognition that access to care and quality of care are not enough to be healthy has led to a recent rapid growth of SDH interventions within health care.^{4,5}

Nature is an example of a neighborhood condition and a commonly accepted SDH.⁶ Nature impacts health through boosted immune response, improved air quality, reduced urban heat island effect, reduced stress, increased physical activity, and development of social connections.^{7–9} In fact, nature has been proposed as a tool to reduce deeply entrenched geographic and socioeconomic health disparities.¹⁰

Despite the acceptance of nature as an SDH, the abundant evidence linking nature and health, and the calls for providers to discuss nature with patients from public health and medical professional organizations, nature is generally missing from the rapidly growing pool of health-care-generated SDH interventions.^{11,12} This represents a missed opportunity to leverage nature as a community health tool, especially for low-resourced neighborhoods. This article makes the case for nature as an SDH intervention, including healthcare providers engaging in nature contact counseling and health systems investing in creating new local neighborhood green space.

NATURE AND HEALTH: THE EVIDENCE

The evidence linking nature and health has been reviewed previously in depth.⁷ Briefly, the literature falls into 3 broad categories: population-level studies evaluating the impact of varying levels of residential green space, studies evaluating the immediate health impacts of nature contact, and intervention or quasi-experimental studies that provide causal evidence.

In population-level studies, which are largely associational, living near nature has consistently been associated with many physical, mental, and social health benefits, including reduced diabetes, improved depression, and improved risk of stress-related conditions such as heart disease.^{7,13} Nature has even been associated with reduced mortality, such as in the Nurses' Health Study.¹⁴

Another group of studies demonstrates an immediate physiologic benefit after both active and passive nature visits.¹⁵ A review found evidence of reduced blood pressure after nature visits in 14 of 20 included studies with interventions ranging from passive sitting to outdoor runs.¹⁵ There is also evidence of an immediate emotional benefit.¹⁶ For example, walking in a natural environment compared with an urban environment leads to a decreased rumination, a maladaptive thought pattern associated with depression, and a decreased MRI (magnetic resonance imaging) neuronal activity in the brain area that controls rumination.¹⁷

Finally, experimental and quasi-experimental studies provide strong evidence for the positive relationship between nature and health. An RCT reported that adding new green space to low-resourced neighborhoods led to reduced crime, improved perception of safety, more social connections, and reduced feelings of depression.^{18,19} Two quasi-experimental studies on tree loss from emerald ash borer infestation demonstrated that losing trees leads to increased crime and cardiovascular and respiratory deaths.^{20,21} Though more research is needed, especially prospective trials, the question is no

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longer whether nature is beneficial for health; rather, more nuanced questions about the mechanism, dose, specific green space attributes, and user characteristics promoting or inhibiting health have emerged.

NATURE CONTACT COUNSELING

Currently, the evidence linking nature and health is strong enough to recommend that primary care offices incorporate nature contact counseling into existing SDH efforts. Nature, broadly defined, includes any outdoor space with vegetation such as large municipal parks, informal community parks, trails, greened schoolyards, and community gardens. The goal of counseling is to influence how patients interact with their existing neighborhood environment. Three aspects of nature contact counseling to consider are (1) the content, (2) who gets counseling, and (3) who provides counseling.

Nature Contact Counseling Content

During nature contact counseling, providers should review the health benefits of nature and assess current levels of outdoor time, patient perceptions of nature, and potential barriers to increasing nature contact. Providers should emphasize that spending time in nature can involve a variety of activities in addition to physical activity. For example, simply sitting down, talking, reading, listening to music, or creating art in nature is likely beneficial.

Providers should also talk with patients about where to spend time in nature, giving consideration to spatial access and social access. Spatial access is the distance one has to travel from home to nature.²² Some studies of spatial access demonstrate that racial minorities and people in low-resourced neighborhoods have less access to parks, whereas other studies demonstrate no pattern of park distribution.²³ Social access involves issues of safety, maintenance, and walkability that influence nature use—all important to consider in low-resourced neighborhoods.²² Furthermore, the legacy of racial exclusion from public parks may result in minorities feeling unwelcome or unsafe in these spaces.²⁴

There is not yet enough research to recommend a specific dose—duration or frequency—of nature contact, although several recent studies do suggest that dose matters.²⁵ A cross-sectional study of almost 20,000 participants demonstrated an improved likelihood of reporting good health and greater well-being with cumulative nature contact >120 minutes per week compared with 0 minutes per week.²⁶ The relevant dose of nature contact will likely vary depending on sociocultural factors, underlying disease, and the health goal.

Similar to other health behavior counseling areas such as physical activity, nature contact counseling may have a

limited impact on actual behavior change without additional support.²⁷ Primary care offices can utilize existing online resources to help patients locate nature nearest to locales where they spend time. The recent ParkRx movement involves providers—primarily pediatricians—prescribing spending time in nature and sometimes includes office organized nature visits.²⁸ For example, an RCT found that among low-income minority families, clinician-recommended park visits and office-led group visits increased the number of family park visits, reduced stress among parents, and reduced stress and improved resilience among children.^{29,30} More research is needed to determine the most effective way to support patients in increasing nature contact. Future interventions could deploy a behavioral economics framework for behavior change that has been successful in other health promotion behaviors like physical activity.³¹

Offices can also grow capacity for community-led greening efforts by referring patients to organizations whose mission is to increase nature access through activities such as tree planting, park cleanups, and community gardening. In this way, efforts within the primary care office would support both individual patients and community-led advocacy for increased clean and safe green space in their neighborhoods.

Who Gets Counseling

Recommending nature contact will not be a one-size-fits-all approach. Individualized strategies for each patient are needed to ensure the benefit and avoid unintended negative consequences of spending time in nature. For example, those with respiratory conditions such as asthma or chronic obstructive pulmonary disease are more likely to experience an exacerbation on high pollen count days.³² Similarly, if a park is near a major roadway, spending time there may increase exposure to air pollution, which could also be harmful for people with respiratory conditions. Consideration should also be made for patients with limited mobility owing to chronic conditions or older age and who may be at a higher risk for falls. Finally, accessing nature will look different in urban, suburban, and rural locations. Providers should individualize nature contact counseling recommendations for each patient.

Who Provides Counseling

Any healthcare provider, including physicians, nurse practitioners, physician assistants, nurses, and social workers, could deliver nature contact counseling. One group particularly suited for counseling may be community health workers, who are “trusted member[s] of and/or has an unusually close understanding of the community served.”³³ Community health worker-led SDH interventions have successfully

improved chronic disease outcomes in low-income populations.³⁴ Community health workers who have knowledge about neighborhood conditions, including local nature, would have a unique understanding of the spatial and social access issues patients face and are adept at addressing barriers to behavior change in culturally competent ways.

Healthcare providers are subject to high-stress work environments, suffer from high rates of burnout, and may themselves benefit from more nature contact. Research from other behavior counseling domains such as physical activity suggests that providers who themselves regularly engage in nature contact may be more willing to recommend nature contact for their patients.³⁵

Adding nature contact counseling to the growing list of important SDH interventions and preventive health discussions occurring during routine primary care visits may be perceived as burdensome by office staff and providers. Framing nature counseling as an entry point to discuss healthy living more generally is one way to address these concerns. Another way is the recognition that nature contact has the potential to influence a wide range of physical and mental health outcomes.

HEALTH SYSTEM NEIGHBORHOOD INVESTMENT INTO NATURE

Health systems have the structural and financial resources to change neighborhood conditions directly. During the past 2 years, health systems have invested \$2.5 billion into SDH interventions, involving housing access, education, food insecurity, and employment.⁵ Only a handful of health systems invest directly in neighborhood conditions, which arguably addresses upstream SDH with the potential for broader population-level impact.³⁶ For example, a cornerstone of the Healthy Neighborhoods Healthy Families initiative of the Nationwide Children's Hospital in Columbus, Ohio, is to increase access to affordable housing for people living nearby through renovating blighted homes.

Health systems, in partnership with external stakeholders, should invest in new, safe, and accessible green space as well as renovate and maintain existing green space in the neighborhoods where their patients live. An example of this is the Baton Rouge Health District in Baton Rouge, Louisiana, a partnership between local health systems, municipal leaders, and an architect and planning firm.³⁷ Health districts link urban planning, community health, and economic growth to physically connect the provision of health services with surrounding communities, including new green space, walking trails, and access to fresh food.

Vacant lot greening, a simple, scalable, and low-cost urban nature intervention, is another example of an

evidence-based intervention that health systems can invest in to promote health. In a citywide RCT, vacant lots were randomly assigned to either a greening intervention involving cleaning previously blighted spaces and adding new grass, trees, and a low wooden fence; a trash cleanup-only intervention; or no intervention. Crime rates went down, and people living near greened lots reported feeling less depressed, feeling safer, and having more social interaction with neighbors after greening.^{18,19} This low-cost intervention provided new green spaces, thus increasing spatial access, but also provided clean and well-maintained spaces that translated into social access.³⁸

Special attention must be given to avoid gentrification, a potential negative consequence of neighborhood investment.^{39,40} Health systems should include community input at the start of planning through implementation to determine the location and design features of new green space. Neighborhoods with poor health metrics and low socioeconomic indicators based on administrative data should be targeted first. Housing and urban planning experts should also be included to avoid investment in areas that are on the verge of or are already gentrifying.

CONCLUSIONS

It is important to note that science has only recently caught up with what humans seem to know instinctively about the therapeutic properties of nature over thousands of years. In Psalm 23 of the Old Testament, David wrote, "He makes me lie down in green pastures: he leads me beside quiet waters. He restores my soul." The Shinto religion in Japan revolves around nature; Japanese gardens designed for healing were started in the 7th century and are today found in more than 50 countries. In the Canon of Medicine, completed in 1,025, the Persian and Muslim Physician–scholar Avicenna extols the virtues of fresh air found in dense urban forests and near trees for human health.

Of course, nature is not a cure all, but with a growing body of scientific evidence increasingly confirming the historical connection between nature and health, healthcare providers and health systems are urged to seriously consider how to leverage the health benefits of nature in the growing SDH intervention movement.

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