

Nature-based Pathways to Health Promotion: The Value of Parks and Greenspace

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The built environment is a key social determinant of health. Exposure to parks and greenspace can improve physical and mental health and provide other benefits that enhance well-being. Programs and initiatives that capitalize on nature-based opportunities offer health care providers with a cost-effective alternative for upstream health promotion.

Introduction

Contemporary health challenges require innovative solutions. Rising health care costs linked to chronic disease, coupled with inadequate access to health resources in the wake of the COVID-19 pandemic, fuel growing concerns about morbidity and mortality across diverse populations [1]. These challenges threaten the efficacy and financial sustainability of the health care system. A focus on the social and environmental determinants of health and well-being could help the public health community strategically address multiple objectives in a sustainable and socially equitable way [2, 3].

Decades of research has shown the variety of ways exposure to natural areas can positively impact human health and well-being [4, 5]. The salutogenic potential of greenspace—which includes key components of the built environment such as public parks, greenways, gardens, and forests, as well as private yards and natural areas—is particularly important. Because the benefits provided by parks and greenspace are typically free and publicly accessible, they represent a cost-effective alternative and/or supplement to more conventional health promotion strategies [6, 7]. In this commentary, we describe a variety of health-related benefits that parks and greenspace provide and explore programs and tools being utilized to ensure these benefits are realized across diverse populations.

Physical Health Benefits

Parks and greenspace improve physical health in many ways, often by creating environments that encourage active lifestyles and improve access to exercise opportunities [8]. Studies have shown that park availability and park use are positively correlated with physical activity [9]. Use of greenspace and outdoor recreation can also enhance cardiovascular health by influencing risk factors such as

cholesterol levels, hypertension, BMI, and obesity [10]. In addition to improving physical health through exercise, many park-based programs focus on nutrition education and fostering healthy eating habits [11]. Engagement with community gardens—a specific type of greenspace often co-located in parks in public spaces—can provide access to fresh produce, promote active lifestyles, and cultivate social connections that improve health outcomes [12]. Parks and greenspace also provide ecosystem services that affect health in other ways, even for people who never visit them [7]. For example, urban greenspace can bolster human and ecosystem health by improving air quality, regulating ambient temperature, and attenuating impacts of severe weather events [13]. Some evidence even suggests that proximity to and use of greenspace may reduce population-level mortality rates [14], a benefit that could be particularly important during unprecedented global events such as the COVID-19 pandemic [15].

Mental and Social Health Benefits

Exposure to parks and greenspace can benefit mental health in a variety of ways. Contact with nature enhances cognitive functioning and emotional well-being by improving attention restoration and reducing stress [16]. Nature-based experiences can decrease the incidence and severity of anxiety disorders, attention deficit and hyperactivity disorders (ADHD), and depression [4, 17]. Proximity to parks [18] and greenspace [19] is associated with subjective well-being and happiness of urban residents, which can improve psychological health and longevity. These mental health benefits have been particularly pronounced during the COVID-19 pandemic [20]. Connection to nature also enhances positive youth development [21], highlighting benefits throughout the lifespan.

In addition to health benefits for individuals, parks and greenspace offer other assets to communities. As places

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where people gather and interact, parks enhance social engagement and cohesion across neighborhoods [22]. High-quality parks and built environment features may be particularly effective at fostering positive social interactions and social capital within historically marginalized communities [23]. The presence of greenspace also reduces other population health risk factors, such as crime [24]. Parks and greenspace provide financial advantages that should not be overlooked either. Green land cover is associated with lower levels of health care spending [6], and residents of cities with more parks report higher levels of financial well-being and security [18]. Exposure to nature also inspires pro-environmental attitudes and behavior [25], which helps guarantee that the benefits associated with parks and greenspace are sustained with minimal need for intervention. For all of these reasons, nature-based solutions represent unique, proactive, and cost-effective strategies for promoting health and well-being.

Concerns about Equity

Despite the immense potential of parks and greenspace, these health resources often remain inequitably distributed across diverse communities. Neighborhoods with a large proportion of low-income or racial/ethnic minority residents typically experience limited access to parks and greenspaces [26, 27]. Even when parks are located in low-income communities of color, they tend to be of lower quality [27] and are often used less frequently [28]. Thus, the benefits parks provide are rarely accessible to and enjoyed by all segments of society [29]. This reality highlights the need to consider equity and environmental justice issues when assessing the positive and negative impacts of the built environment on the health care system.

Programs that Leverage the Health-Promoting Power of Parks

Increasing recognition among health care providers of the health-promoting potential of parks and greenspace has inspired a number of programs, tools, and initiatives designed to leverage these opportunities in North Carolina and across the United States. Examples include the National Park Service's *Healthy Parks, Healthy People* initiative, the *Leave No Child Inside* movement, and the rise of park and nature prescription programs (Park Rx) designed to formalize the health benefits of parks and other natural areas through a written prescription from a health care provider. Park or nature prescriptions can make physical activity and exercise more accessible, meaningful, and sustainable for vulnerable populations, potentially boosting patient adherence to the "treatment." Current iterations of Park Rx range from informal programs like the NC-based TRACK Rx *Kids in Parks*, which encourages children and their families to explore local trails, to patient-tailored clinical prescription programs such as SHINE, a formal partnership between the UC-San Francisco Children's Hospital and the East Bay

Regional Park District in California [30]. Although the Park Rx model offers a promising pathway to integrating parks and greenspace into conventional health care systems, more research and evidence is needed to assess the efficacy of nature prescription programs and expand support and investment from physicians, insurance companies, parks and recreation professionals, and other key stakeholder groups [31].

Novel partnerships are also helping to strengthen connections between parks, the built environment, and health and well-being. For example, *Let's Move Libraries* is a UNC-Greensboro-based clearinghouse and resource for connecting public libraries and active living opportunities, and a majority of its programs are outdoor-based [32]. With *StoryWalk*, a notable example that has greatly expanded during the pandemic, libraries partner with parks to physically post children's book pages on poster boards throughout a public space, encouraging intergenerational walking as well as literacy. Cooperative extension offices located in each US county are also partners in this work, perhaps best exemplified by the 4-H Youth Development programs that include a number of outdoor and agricultural activities (e.g., gardening) aimed at improving physical and nutritional well-being [33]. In many places, including North Carolina, county extension offices are also partnering with parks and recreation providers to enhance equitable access to greenspace through shared use policies that keep school playgrounds and fields open for community activity after hours and on weekends [34].

Play Streets and Open Streets initiatives represent another broad alliance of partnerships across the United States that have grown during the pandemic. Both Play Streets (generally one to a few blocks in length) and Open Streets (up to 40 or more miles in length) turn streets into public spaces for play and recreation while closing them to automobile traffic. Most are conducted along tree-lined streetscapes and typically incorporate parks or other public greenspaces along the route. Open Streets increase access to outdoor recreation and are associated with multiple healthy behaviors, including physical activity [35]. The health insurance industry represents another unorthodox partner, but one that is increasingly inclined to offer financial support to park development and other projects that mitigate health risk factors by promoting active lifestyles [36].

As the movement to improve health by connecting people and nature grows, equity remains a concern. Vulnerable populations and communities that experience disproportionate burdens of both acute illnesses and chronic disease may benefit most from access to high-quality parks and greenspace. New tools such as at the Trust for Public Land's *ParkServe* and *ParkScore* indexes, as well as the newly validated *ParkIndex* tool [37], provide communities with ways to assess current park distribution patterns and identify and invest in areas of need, ultimately enhancing access to

these critical health resources. Equity plans embedded in new park projects, such as the one guiding the growth of Dorothea Dix Park in Raleigh, North Carolina, help ensure that development does not fuel green gentrification and exacerbate health disparities by displacing the populations who need park-related benefits the most [38].

Future Directions for Research and Practice

Progress continues, but more rigorous research, translation, and dissemination are needed to help health care professionals, urban planners, and other key decision-makers adopt a broader, integrated view of the critical connections between nature and human health [13]. Uptake by the medical field has been slow, in part because unanswered questions abound. For example, researchers continue to debate the intensity, frequency, or “dosage” of nature needed for physical and mental health benefits to accrue [39]. The influence of context (e.g., urban versus rural) on the relationship between greenspace and health also remains unclear [40]. Investigations of the built environment infrastructure surrounding parks and greenspace, including factors such as neighborhood walkability and its associations with cardiovascular [41] and psychological health [42], are another future research priority. Efforts to address these knowledge gaps could generate more support for park-based health promotion strategies.

Despite these challenges, the health-related benefits generated by parks and greenspace may be more conspicuous now, during the COVID-19 pandemic, than ever before. At this critical juncture, the medical community could embrace the value of nature-based interventions. This might be as simple as expanding the Park Rx model to encourage discussions between physicians and individual patients about how to access and utilize local parks, or it could involve more comprehensive policy-oriented, community-level approaches to health promotion that focus on equitable access and sustained use of parks and greenspace. Efforts to engage and partner in more rigorous patient-centered, outcome-driven translational work focused on links between nature and health present ongoing opportunities. Although more research is needed, the current evidence is clear: elevating the role of greenspace access and quality in planning, policy, and decision-making across diverse contexts could ultimately lead to a healthier and happier population. **NCMJ**

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