Shifting Gears: Engaging Nurse Practitioners in Prescribing Time Outdoors

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ABSTRACT

Chronic diseases are responsible for about 70% of deaths annually, and treatment of these diseases accounts for 86% of national health care expenditures. Individuals are spending more time indoors, leading to "nature-deficit disorder." Nurse practitioners are looking for ways to address lifestyle changes to reduce chronic disease burden. "Park prescriptions" are gaining popularity and spending time outdoors can address health problems, including obesity, depression, and behavioral problems. The National Park Prescription Initiative has been launched nationwide with support from the Surgeon General and the National Park Service. Nurse practitioners can play a role in promoting such programs and tracking outcomes.

Keywords: active living, built environment, chronic disease, nature, obesity, Park Rx

Busy lifestyles and technology have contributed to a shift in the United States to a sedentary lifestyle, and an increase in chronic diseases such as coronary artery disease, diabetes, and depression. According to the United States Centers for Disease Control and Prevention (CDC), chronic diseases are responsible for 7 of every 10 deaths annually and these diseases account for 86% of national health care expenditures. Richard Louv, author of *Last Child in the Woods*,[1] describes an epidemic of "nature-deficit disorder," due to children's reduced time outdoors in exchange for electronic media and academic demands that can contribute to obesity, attention deficit-hyperactivity disorder (ADHD), and vitamin D deficiency.

Smartphones and computers, the reduction of school recess time, and concerns over neighborhood crime have decreased the amount of time spent outdoors, and less than half of all adults meet the physical activity guidelines for exercise. The No Child Left Behind Act of 2001 resulted in reduced time for physical education, art, and recess, and for increased time in the classroom. Currently, almost three fourths of teens participate in $<$ 1 hour of physical activity per day.[2] A report by the World Health Organization ranked lack of physical activity fourth on a list of risk factors for noncommunicable chronic diseases, behind high blood pressure, smoking, and high blood glucose.[3] Lack of physical activity and limited exposure to nature are separate concerns, but time outdoors is ideal to promote spontaneous physical activity.

Technology has brought entertainment, social interaction, and video gaming into the home, while decreasing the need to be outside to see friends, attend a movie, or meet peers for outdoor activities. The growth in electronic devices has led to teens spending $>$ 7 hours per day on all forms of e-media, including computer games, social media, and the internet, and $<$ 30 minutes of outdoor time daily.[4] The physical inactivity of screen time is often associated with increased consumption of unhealthy foods and subsequent overweight and obesity issues.[5] Data from the National Health Interview Survey show that, if obesity rates continue, 1 in 3 persons will develop diabetes in his or her lifetime.[6] Over the last 20 years, use of personal electronics has increased, whereas time spent outdoors has decreased.[7] According to the

National Wildlife Federation, "our kids are out of shape, tuned out and stressed out, because they are missing something essential to their health and development: connection to the natural world.[8]

OUTDOORS AND HEALTH

Exposure to green environmental spaces is an essential component to human health that has been curtailed in modern society. Nature can promote healthy social behavior and reduce stress.[9] Time spent outdoors offers a number of health and wellness benefits for children and adults alike. For children, green spaces have been associated with improved test scores, improved self-discipline and cognition, and decreased behavioral issues that may be attributed to ADHD.[10] A study of 421 children with ADHD was conducted using an internet-based survey of parents. The findings suggest that everyday play outdoors reduces symptom severity.[9]

Obesity has numerous contributing factors and therefore has a number of complex solutions. Decreased physical activity is a contributing factor that needs to be addressed by clinicians and community efforts. Data on 2,810 Head Start children were reviewed and the results show that the children who played outdoors for roughly 37 minutes per day were less likely to be obese and those who played outdoors for 60 minutes a day showed improvements in body mass index.[11]

Additional studies have shown that increasing time spent outdoors may be a simple strategy to reduce the risk of developing myopia and its progression in children and adolescents, given that the eye movement of looking at things close up and far away in succession in a park can be protective against myopia.[12] Studies indicate that the decline in vitamin D among older people is probably due to decreased sun exposure from decreased outdoor time.[13] Time spent outdoors increases exposure to ultraviolet B light with improved synthesis of vitamin D.

Internationally, concepts such as *Shinrin-yoku*, Japanese for "forest bathing," have demonstrated that exposure to nature improves physical and mental health. One Japanese study noted that forest environments promote lower concentrations of cortisol, lower pulse rate, lower blood pressure, greater parasympathetic nerve activity, and lower sympathetic nerve activity than do city environments.[14]

There are numerous innovative approaches to getting children outdoors. An elementary school teacher in Quechee, Vermont, held "Forest Mondays" class outdoors every Monday, rain or shine. Standardized test scores increased more in the year the students were outdoors than in other years in the teacher's experience.[15] The East Bay Regional Park District in California is working with the University of California, San Francisco Benioff Children's Hospital in Oakland to provide free transportation, healthy snacks, and outdoor activities for children with chronic diseases and their families to teach about integration of outdoor time.[16] Furthermore, the park has installed visuals of the parks in the clinic as a starting point to talking about outdoor time, and exam rooms are named after regional parks. Safe Routes to School, a national program providing technical assistance and funding to local municipalities, aims to making biking and walking to school safer and fun. In Apex, North Carolina, a walk-to-school coalition began a walking school bus, whereby parents and children meet at a departure point and walk to school together.[17]

St. Luke's Hospital in eastern Pennsylvania partnered with the Delaware and Lehigh Heritage Corridor to form "Get on Your Tail on the Trail" to encourage physical activity on the historic pathway. Under the Affordable Care Act, nonprofit hospitals must conduct community health assessment plans and address the findings. This shift from treating chronic diseases to preventing them has resulted in residents logging $>$ 1.8 million miles of walking, running, and biking on the trail.[18]

NATIONAL RECOMMENDATIONS

The 2008 Physical Guidelines for Americans and the National Physical Activity Plan support physical activity for physical and mental health purposes and suggest that adults get at least 150 minutes of moderate activity or 75 minutes of vigorous activity a week, and children be active for at least 1 hour per day.[19,20] In addition, political support from Michelle Obama's "Let's Move!" campaign and Surgeon General Vivek Murthy's "Step it Up: The Surgeon