

## Podcast transcript: Spending Time in Nature May Slow Alzheimer's, Parkinson's Disease Progression

[Theme music]

**Ashley Ahearn (AA):** You're listening to Environmental Health Chat – a show from the National Institute of Environmental Health Sciences that explores the connections between our health and our world.

I'm Ashley Ahearn.

[Music fades out]

For many people, spending time outside – be it in the mountains, forests, open grasslands or by the ocean or a lake – makes us feel good.

And a growing body of research suggests that it's *also* good for our health.

Dr. Jochem Klomp maker has been studying these connections throughout his academic career. He's a postdoctoral fellow at the Harvard T.H. Chan School of Public Health.

**Jochem Klomp maker (JK):** So, what we see in most studies is that in green spaces, air pollution and traffic noise levels are generally lower, and air pollution and traffic noise are well-documented environmental risk factors for a range of health outcomes.

**AA:** Green spaces – especially in urban areas – can also mitigate heat waves and provide places for people to relax and reduce stress. Research suggests that respiratory and heart health are better in greener areas.

Dr. Klomp maker is particularly curious about how green spaces might reduce our risks for neurodegenerative diseases like Alzheimer's and associated dementias as well as Parkinson's disease.

**JK:** We know that neurological disorders are one of the leading causes of disability and death worldwide. And due to lengthening of life expectancy, the prevalence of neurological diseases will likely continue to increase over the next decades. And because there are no cures that exist for Alzheimer's and Parkinson's diseases, I think it's really important to identify modifiable risk factors, like environmental exposures.

**AA:** More specifically, Dr. Klomp maker wanted to understand how availability of green space could reduce the risk of developing those neurological disorders.

So, he and his colleagues conducted a massive study looking at health data from more than 60 million Americans over 65 years old living in the contiguous U.S. between 2000 and 2016.

**JK:** And so we had information about age, sex, race, ethnicity, Medicaid eligibility –which is an indicator of socioeconomic status – and residential zip code.

**AA:** The zip code is key for analyzing study participants' proximity to green space using satellite imagery.

But Dr. Klompmaker went deeper than just "green space." By overlaying data from the U.S. Geological Survey Protected Areas database, he and his colleagues were able to distinguish between green space more broadly – which could mean farm fields or private lands – and publicly usable space or parks. They also looked at "blue space" – or proximity to the ocean or lakes and rivers. But they didn't stop there...

**JK:** And to this dataset, we linked hospitalization data. So, we linked first hospital admissions with a primary or secondary discharge diagnosis of Alzheimer's disease and related dementias or Parkinson's disease.

**AA:** Of the 61.7 million study participants they observed, about 7.7 million were admitted to the hospital for Alzheimer's and related dementias and 1.2 million were admitted for Parkinson's disease during the 16 years of the study.

So, how did proximity to green space, park cover, and blue space correlate with those hospitalizations?

**JK:** We found that greenness was associated with a decrease in Alzheimer's disease and related dementia hospitalizations after adjustment for potential confounders. So increasing greenness levels could reduce the risk of Alzheimer's disease and related dementia hospitalizations.

**AA:** Basically, they found that if you live in a zip code that shows more green in satellite imagery you were less likely to be hospitalized with Alzheimer's and related dementias. Now, whether that green space was a park or not didn't have a significant effect, and if you were near blue space that also didn't seem to have an effect.

But whether you lived in a rural or urban zip code also made a difference. The researchers found that when it came to Alzheimer's disease and related dementias living near parks in urban areas had a greater protective effect for individuals of lower socioeconomic status.

**JK:** We observed – especially in urban areas – that the associations of park cover were stronger for individuals of lower socioeconomic status. And we do not have a clear explanation of why we see that pattern. It could be differences in quality of greenness and blue spaces. It could also be that people who live in low socioeconomic status neighborhoods tend to use parks more often than other individuals. That means that if you would increase park cover for those specific groups, the effect would be stronger than if you would increase park cover in a high socioeconomic status neighborhood.

**AA:** Now, when it came to Parkinson's disease the results were a bit more straightforward.

**JK:** For Parkinson's disease hospitalizations, we observed protective associations of greenness, park cover, and blue spaces.

**AA:** Meaning, all of the above were correlated with a reduction in hospitalizations for Parkinson's disease.

Dr. Klompmaker has a background in studying air pollution. And in this current study, he says air pollution seems to be a contributor to hospitalizations for Parkinson's, Alzheimer's and other dementias. Trees remove pollution from the air, so living in green spaces often means living with cleaner air. But, he says, there are other factors they weren't able to study that may have also played a role.

**JK:** I think air pollution is an important pathway that, in our study, explains part of the effects. We didn't have the data to evaluate other important pathways that could explain the effect – it could be physical activity, it could be social interaction, it could be less stress. It could be less noise. But we weren't able to study that.

**AA:** What we do know, Dr. Klompmaker says, is that green spaces, parks, and blue spaces aren't just nice to be around... they're good for us – both mentally and physically.

**JK:** It's important to note that the environment that we live in could affect our health and our health behaviors in multiple ways, and that living near greenness or blue spaces may make you more physically active, which reduces stress. And those could affect our health. And I think as life expectancy increases globally, policymakers may want to consider interventions to increase natural environments and could thereby prevent or reduce the risk of Alzheimer's disease and related dementia, and Parkinson's disease hospitalizations.

**[Music comes up]**

I'm Ashley Ahearn. Thanks for listening to Environmental Health Chat.