Medical Xpress

Street trees close to the home may reduce the risk of depression

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High density of street trees in cities (like here in Leipzig City centre) may help to improve mental health as well as local climate, air quality and species richness. Credit: Philipp Kirschner

Depression, especially in urban areas, is on the rise, now more than ever.

Mental health outcomes are influenced by, among other things, the type of environment where one lives. Former studies show that urban greenspace has a positive benefit on people experiencing mental ill health, but most of these studies used self-reported measures, which makes it difficult to compare the results and generalize conclusions on the effects of urban greenspace on mental health.

An interdisciplinary research team of UFZ, iDiv and Leipzig University tried to improve this issue by involving an objective indicator: prescriptions of antidepressants. To find out whether a specific type of 'everyday' green space—street trees dotting the neighborhood sidewalks—could positively influence mental health, they focused on the questions, how the number and type of street trees and their proximity close to home correlated to the number of antidepressants prescribed.

The researchers analyzed data from almost 10,000 Leipzig inhabitants, a mid-size city in Germany, who took part in the LIFE-Adult health study running at the University of Leipzig Medical Faculty. Combining that with data on the number and species type of street trees throughout the city of Leipzig, the researchers were able to identify the association between antidepressants prescriptions and the number of street trees at different distances from people's homes. Results were controlled for other factors known to be associated with depression, such as employment, gender, age, and body weight.

More trees immediately around the home (less than 100 meters) was associated with a reduced risk of being prescribed antidepressant medication. This association was especially strong for deprived groups. As these social groups are at the greatest risk for being prescribed antidepressants in Germany, street trees in cities can thereby serve as a nature-based solution for good mental health, the researchers write. At the same time, street trees may also help reduce the 'gap' in health inequality between economically different social groups. No association

of tree types, however, and depression could be shown in this study.

"Our finding suggests that street trees—a small scale, publicly accessible form of urban greenspace—can help close the gap in health inequalities between economically different social groups," says lead author of the study Dr. Melissa Marselle. "This is good news because street trees are relatively easy to achieve and their number can be increased without much planning effort." As an environmental psychologist, she conducted the research at UFZ and iDiv and is now based at the De Montford University of Leicester, UK. Marselle hopes that the research "should prompt local councils to plant street trees to urban areas as a way to improve mental health and reduce social inequalities. Street trees should be planted equally in residential areas to ensure those who are socially disadvantaged have equal access to receive its health benefits."

"Importantly, most planning guidance for urban greenspace is often based on purposeful visits for recreation," adds Dr. Diana Bowler (iDiv, FSU, UFZ), data analyst in the team. "Our study shows that everyday nature close to home—the biodiversity you see out of the window or when walking or driving to work, school or shopping—is important for mental health." This finding is especially now in times of the COVID-19 lock-downs, Bowler adds.

And it's not only human health which could benefit. "We propose that adding street trees in residential urban areas is a nature-based solution that may not only promote mental health, but can also contribute to climate change mitigation and biodiversity conservation," says senior author Prof Aletta Bonn, who leads the department of ecosystem services at UFZ, iDiv and Friedrich-Schiller-University Jena. "To create these synergy effects, you don't even need large-scale expensive parks: more trees along the streets will do the trick. And that's a relatively inexpensive measure."

"This scientific contribution can be a foundation for city planners to save and, possibly, improve the life quality for inhabitants, in particular, in densely populated areas and in central city areas," adds Prof Toralf Kirsten from Leipzig University. "Therefore, this aspect should be taken into account when city areas are recreated and planned, despite high and increasing land cover costs. A healthy life of all living being is unaffordable."

More information: Melissa R. Marselle et al, Urban street tree biodiversity and antidepressant prescriptions, *Scientific Reports* (2020). DOI: 10.1038/s41598-020-79924-5

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