Living Near Green Space May Be Beneficial Against Symptoms of Premenstrual Syndrome

A study of more than 1,000 women in Norway and Sweden examines, for the first time, the positive impact of green space on psychological and physical symptoms of premenstrual syndrome

Barcelona, December 2, 2021. Women living in neighbourhoods with more green space across their lifespan are less likely to experience symptoms of premenstrual syndrome (PMS) than women living in less-green neighbourhoods, according to a new study by the Barcelona Institute for Global Health (ISGlobal)—a centre supported by the "la Caixa" Foundation—and the University of Bergen.

PMS causes clinically relevant psychological and physical symptoms in up to 20% of women of reproductive age. Although a growing body of scientific evidence has shown that natural environments are associated with general and reproductive health benefits, there had not previously been any studies analysing the relationship between green space and PMS.

The new study, published in Environment International, set out to determine whether living near urban green space could have a beneficial effect against PMS symptoms and whether this association was mediated by body mass index (BMI), air pollution or physical activity.

The study used data collected from more than 1,000 women between 18 and 49 years of age from the cities of Bergen (Norway), Gothenburg, Umeå and Uppsala (Sweden) participating in the European RHINESSA cohort. The women completed a questionnaire on lifestyle factors, physical activity and reproductive health, indicating whether they experienced any of eight common symptoms of PMS: irritability, anxiety, tearfulness or increased sensitivity, depression, difficulty sleeping, abdominal pain, breast tenderness or abdominal bloating, and headaches. The study used the Normalised Difference Vegetation Index (NDVI) as a proxy for green space in the vicinity of the participants' homes. BMI was also analysed and residential exposure to air pollution—nitrogen dioxide (NO\textsubscript{2}) and particulate matter (PM\textsubscript{2.5} and PM\textsubscript{10})—was estimated.

The study found that women living in neighbourhoods with more green space had fewer symptoms of PMS and were less likely to experience four of the eight symptoms investigated: anxiety, depression, difficulty sleeping, and breast tenderness or abdominal bloating.

“When we looked at exposure to green space at a specific point in time, the analysis did not yield any significant results,” commented ISGlobal researcher Payam Dadvand, co-coordinator of the study. “Our research therefore underscores the importance of long-term exposure to green space, which is where benefits against PMS symptoms were found.”

“Three of the four symptoms that improved with exposure to green space were psychological, which is consistent with what we already knew: contact with nature helps to reduce stress and improve mental health,” explained lead author Kai Triebner, a researcher at the University of Bergen. “Stress can worsen PMS symptoms and increase levels of the hormone cortisol, which, in turn, could be associated with an increased release of progesterone, which has been linked to the occurrence of PMS symptoms,” he added.
Previous research has suggested that the benefits of natural spaces are associated with increased **physical activity** and decreased exposure to **air pollution**, but this new study did not find a mediatory role for either of these factors.

“More and more studies have shown that **green space is beneficial** to our health,” noted Dadvand. “However, in many cities we don’t have enough of it, or it is not close to where the population lives. City officials should therefore prioritise natural environments as essential for our health.”

**Reference**


**About ISGlobal**

The Barcelona Institute for Global Health, ISGlobal, is the fruit of an innovative alliance between the "la Caixa" Foundation and academic and government institutions to contribute to the efforts undertaken by the international community to address the challenges in global health. ISGlobal is a consolidated hub of excellence in research that has grown out of work first started in the world of health care by the Hospital Clinic and the Parc de Salut MAR and in the academic sphere by the University of Barcelona and Pompeu Fabra University. Its working model is based on the generation of scientific knowledge through Research Programmes and Groups, and its translation through the areas of Training and Analysis and Global Development. ISGlobal has been named a Severo Ochoa Centre of Excellence and is a member of the CERCA system of the Generalitat de Catalunya.

**ISGlobal Press Office**

Pau Rubio  
pau.rubio@isglobal.org  
+34 696 91 28 41

Carol Pozo  
carolina.pozo@isglobal.org  
+34 677 79 44 91