

Increased risk of Parkinson's disease in patients with schizophrenia

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Functional magnetic resonance imaging (fMRI) and other brain imaging technologies allow for the study of differences in brain activity in people diagnosed with schizophrenia. The image shows two levels of the brain, with areas that were more active in healthy controls than in schizophrenia patients shown in orange, during an fMRI study of working memory. Credit: Kim J, Matthews NL, Park S./PLoS One.

A new study conducted at the University of Turku, Finland, shows that patients with a schizophrenia spectrum disorder have an increased risk of Parkinson's disease later in life. The increased risk may be due to alterations in the brain's dopamine system caused by dopamine receptor

antagonists or neurobiological effects of schizophrenia.

The record-based case-control study was carried out at the University of Turku in collaboration with the University of Eastern Finland. The study examined the occurrences of previously diagnosed psychotic disorders and [schizophrenia](#) in over 25,000 Finnish Parkinson's disease (PD) patients treated in 1996–2019.

In the study, patients with Parkinson's disease were noted to have previously diagnosed [psychotic disorders](#) and schizophrenia more often than the control patients of the same age not diagnosed with PD.

"Previous studies have recognized several [risk factors](#) for PD, including age, male sex, exposure to insecticides, and head injuries. However, the current understanding is that the development of PD is due to a joint effect of different environment, hereditary, and patient-specific factors. According to our results, a previously diagnosed psychotic disorder or schizophrenia may be one factor that increases the risk of PD later in life," says doctoral candidate Tomi Kuusimäki from the University of Turku who was the main author of the research article.

Study Changes Conception of the Association between Parkinson's Disease and Schizophrenia

PD is currently the most rapidly increasing neurological disorder in the world. It is a neurodegenerative disorder that is most common in patients over 60 years of age. The cardinal motor symptoms include shaking, stiffness and slowness of movement. In Finland, circa 15,000 patients are currently living with a PD diagnosis.

In Parkinson's disease, the neurons located in the [substantia nigra](#) in the midbrain slowly degenerate, which leads to deficiency in a

neurotransmitter called [dopamine](#). As for schizophrenia, the dopamine level increases in some parts of the brain. In addition, the pharmacotherapies used in the primary treatment of PD and schizophrenia appear to have contrasting mechanisms of action. PD symptoms can be alleviated with dopamine receptor agonists, whereas schizophrenia is commonly treated with dopamine receptor antagonists.

"The occurrence of Parkinson's [disease](#) and schizophrenia in the same person has been considered rare because these diseases are associated with opposite alterations in the brain's dopamine system. Our study changes this prevailing conception," says Kuusimäki.

More information: Tomi Kuusimäki et al. Increased Risk of Parkinson's Disease in Patients With Schizophrenia Spectrum Disorders, *Movement Disorders* (2021). [DOI: 10.1002/mds.28484](https://doi.org/10.1002/mds.28484)

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