

# Study shows biological changes that could underlie higher psychosis risk in immigrants

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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 could explain how migrating to another country increases a person's risk of developing schizophrenia, by altering brain chemistry.

Immigrants had higher levels of the brain chemical dopamine than non-

immigrants in the study, conducted by the Centre for Addiction and Mental Health (CAMH) in Toronto and the Institute of Psychiatry, Psychology and Neuroscience, King's College London in the U.K. Abnormal [dopamine levels](#) are linked to symptoms of schizophrenia. Dopamine is also connected to the body's stress response.

The study was published in the January issue of *Schizophrenia Bulletin*.

"Schizophrenia is still a rare diagnosis," says Dr. Romina Mizrahi, a senior author and Clinician Scientist in the Campbell Family Mental Health Research Institute at CAMH. "But if we can understand the factors that increase the risk of this serious illness among immigrants, we can develop strategies such as social supports to mitigate this risk."

As Canada's population and workforce will decline without migration, a set number of immigrants are accepted into the country each year. While it's not feasible to offer stress supports to all newcomers, the approach of identifying those at highest risk and offering evidence-based interventions to prevent schizophrenia is one that Dr. Mizrahi applies to her work with youth, as Head of the Youth Psychosis Prevention Clinic and Research Program.

The current study involved a type of brain imaging called positron emission tomography (PET), and applied two different approaches to examining dopamine levels.

In Toronto, 56 study participants were given a mild stress test to see its effect on [dopamine release](#). People with schizophrenia, and those at [high risk](#), release more dopamine with this test when compared to a matched healthy group of participants. Among the 25 immigrants in the study, dopamine release was higher than 31 non-immigrant participants. This increase was related to participants' experiences of social stress, such as work overload, social pressures or social isolation.

The London researchers showed that the synthesis of dopamine was higher in immigrants. This increase was related to the severity of symptoms among those considered at high risk of developing schizophrenia, and did not occur among non-immigrants at high risk. In total, 32 immigrants and 44 non-immigrants were involved in this part of the study.

Dr. Mizrahi emphasizes that not everyone with high dopamine levels will develop schizophrenia, nor will the vast majority of migrants.

Yet it is well-established through population studies in Canada, the U.K. and Western Europe that the risk of developing [schizophrenia](#) is higher in immigrants and their children than non-immigrants. Stress - particularly related to perceived discrimination, social isolation and urban living - is believed to increase this risk. The role of stress also appears to be supported by the current findings on brain dopamine levels.

"This is a first step in integrating social science and biological research," says Dr. Mizrahi. "A next step would be to help regulate [stress](#) among higher risk [immigrants](#) through social support programs, and see if this reduces dopamine in the brain and prevents psychosis."

**More information:** Alice Egerton et al, Elevated Striatal Dopamine Function in Immigrants and Their Children: A Risk Mechanism for Psychosis, *Schizophrenia Bulletin* (2017). [DOI: 10.1093/schbul/sbw181](https://doi.org/10.1093/schbul/sbw181)

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