

Increased risk of Parkinson's disease in methamphetamine users, study finds

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People who abused methamphetamine or other amphetamine-like stimulants were more likely to develop Parkinson's disease than those who did not, in a new study from the Centre for Addiction and Mental Health (CAMH).

The researchers examined almost 300,000 hospital records from California covering 16 years. Patients admitted to hospital for [methamphetamine](#) or amphetamine-use disorders had a 76 per cent higher risk of developing Parkinson's disease compared to those with no disorder.

Globally, methamphetamine and similar [stimulants](#) are the second most commonly used class of [illicit drugs](#).

"This study provides evidence of this association for the first time, even though it has been suspected for 30 years," said lead researcher Dr. Russell Callaghan, a scientist with CAMH. Parkinson's disease is caused by a deficiency in the brain's ability to produce a chemical called dopamine. Because animal studies have shown that methamphetamine damages dopamine-producing areas in the brain, scientists have worried that the same might happen in humans.

It has been a challenge to establish this link, because Parkinson's disease develops in middle and old age, and it is necessary to track a large number of people with methamphetamine addiction over a long time span.

The CAMH team took an innovative approach by examining hospital records from California – a state in which methamphetamine use is prevalent – from 1990 up to 2005. In total, 40,472 people, at least 30 years of age, had been hospitalized due to a methamphetamine- or amphetamine-use disorder during this period.

These patients were compared to two groups: 207,831 people admitted for appendicitis with no diagnosis of any type of addiction, and 35,335 diagnosed with cocaine use disorders. A diagnosis of Parkinson's disease was identified from hospital records or death certificates. Only the methamphetamine group had an increased risk of developing [Parkinson's disease](#).

While the appendicitis group served as a comparison to the general population, the cocaine group was selected for two reasons. Because cocaine is another type of stimulant that affects dopamine, this group could be used to determine whether the risk was specific to methamphetamine stimulants. Cocaine users also served as a control group to account for the health effects or lifestyle factors associated with dependence on an illicit drug.

"It is important for the public to know that our findings do not apply to patients who take amphetamines for medical purposes, such as attention deficit hyperactivity disorder (ADHD), since these patients use much lower doses of amphetamines than those taken by patients in our study," said Dr. Stephen Kish, a CAMH scientist and co-author.

To put the study findings into numbers, if 10,000 people with methamphetamine dependence were followed over 10 years, 21 would develop Parkinson's, compared with 12 people out of 10,000 from the general population. "It is also possible that our findings may underestimate the risk because in California, methamphetamine users may have had less access to health-care insurance and consequently to

medical care," said Dr. Callaghan.

The current project is significant because it is one of the few studies examining the long-term association between methamphetamine use and the development of a major brain disorder. "Given that methamphetamine and other [amphetamine](#) stimulants are the second most widely used illicit drugs in the world, the current study will help us anticipate the full long-term medical consequences of such problematic drug use," said Dr. Callaghan.

Provided by Centre for Addiction and Mental Health

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