

BEYOND THE BASICS

Ecstasy

What is ecstasy?

Ecstasy is one of the heterogeneous group of illicit drugs known as Club Drugs – a variety of dangerous drugs often used by youth and young adults at all-night dance parties, dance clubs, bars, concerts and parties to enhance the “rave” experience, energize users and decrease barriers in interpersonal relations. These drugs are usually readily available and are relatively inexpensive to obtain. Costs can range from \$15 to \$50 per tablet depending on availability, demand and location.^{1,3}

The chemical name of ecstasy is methylenedioxymethamphetamine (3,4-methylenedioxymethamphetamine, abbreviated as MDMA), which is closely related to methamphetamine. It is also known on the street as “E,” “XTC,” “X,” “Adam,” “Eve,” “clarity,” “lover’s speed,” “euphoria,” “love doves,” “batmans,” “decadence,” “happy pill,” “rave” and the “love drug.”^{2,4}

MDMA is chemically similar to both stimulant and hallucinogenic drugs, and it creates a sense of heightened well-being and affection towards others. Users of the drug believe it enhances their enjoyment of an event by changing their sensory experiences – lights may appear brighter or music may sound more intense. The drug is also used to give users more energy, allowing them to stay awake longer and dance for extended periods of time.⁵

Of significant concern is users of MDMA mistakenly believe the drug is safe to use, in part because of the historical lack of research into its repeated and/or long-term use. However, recent studies into its long term neurotoxicity have shown that MDMA use can induce long-lasting and perhaps even permanent damage in specific areas of the brain.³

Medical Use

MDMA was developed in Germany in the early 1900s as the starting material for the synthesis of other drugs. In the 1970s and 1980s, despite the lack of federal approval and clinical research, MDMA was used as a psychotherapeutic tool to improve communication during sessions with patients. MDMA was approved for limited use in 2000 for a small clinical trial to determine its potential in treating post-traumatic stress disorder. It was during the 1980s that MDMA began to be available on the street.^{3,6}

Prevalence of Use

In 2004, the Canadian Centre for Substance Abuse (CCSA) added ecstasy to the category of hallucinogen in their general population survey. According to this survey, Canadians reported an increase in hallucinogens use of 4.1% over the previous year.⁷

The only province-wide study that reports on ecstasy use in Canada is a 2005 Ontario student survey in which 4.4% of all students (ranging from 0.6% of Grade 7 to 9.8% of Grade 11 students)

reported ecstasy use. This represents a significant increase from 1993, when 0.6% of students surveyed reported use.⁸

Similar U.S. studies, including the National Survey on Drug Use and Health, indicate an increase in lifetime use of MDMA among individuals aged 12 years or older from 4.3% in 2002 to 5.2% in 2008.⁶

The investigators from the National Institute on Drug Addiction (NIDA) Monitoring the Future Study have articulated concern that the perceived risk of using the drug has been declining over the last several years – it is considered by many as a “safe” drug – potentially opening the door to renewed interest.³

When it first became popular, the typical users of MDMA were young, white individuals participating in the rave scene. Now, reports from NIDA’s Community Epidemiology Work Group indicate use has spread beyond this group to a broader range of ethnic groups and to urban gay and bi-sexual males and females. (Its use among the latter is generally as a sexual aid.)³

Pharmacokinetics

Ecstasy/MDMA is available as either tablets or capsules, which are usually taken orally, but powder is also available to be snorted or dissolved in water and injected. A standard street dose is 50 to 200 mg. MDMA is absorbed rapidly into the bloodstream, with effects usually beginning 60 to 90 minutes after the drug is taken and lasting three to six hours.^{3,5}

Users report they will often take a second dose of the drug once the effects of the first dose begin to wear off.^{3,6}

Once MDMA is absorbed, it interferes with its own hepatic metabolism. As a result, additional doses can produce significant accumulation of the drug, with consequent toxicity. MDMA also interferes with the metabolism of other drugs, including some of the adulterants that may be present in the tablets.⁶

Pharmacodynamics

Similar in chemical structure to methamphetamine, MDMA produces a greater serotonin release and somewhat less dopamine release than does methamphetamine, resulting in increased serotonin activity. As serotonin is integral to the regulation of mood, sleep, pain, emotion, appetite and other behaviours, the immediate perceived benefits and physical responses to MDMA use are a result of excess serotonin in these serotonergic systems. The excessive serotonin release will eventually result in a depletion of this important neurotransmitter, thus accounting for the negative behavioural effects experienced after the high of the drug has passed.^{1,6}

Short-term Effects

Initially, an individual may experience a sudden amphetamine-like “rush,” followed potentially by nausea and possibly vomiting. After the “rush” is a plateau stage, which lasts between three and six hours.⁶

Effects of use can include: distortions in time and perception, as well as enhanced enjoyment of tactile experiences; a general sense of well-being and self-assurance through increased openness to others; empathy and trust among people; increased energy and wakefulness, euphoria, excitement; and heightened sexual pleasure.³

Conversely, users may experience recklessness, confusion, irritability, paranoia, severe anxiety, agitation, detachment and depression. These effects can occur at the time of use or even for days or weeks after use.^{2,3}

Adverse health effects can include increases to heart rate and blood pressure, nausea, sweating or chills, blurred vision, fainting, involuntary teeth-clenching and muscle cramping. MDMA inhibits the body’s ability to regulate temperature and can result in death due to dehydration, heat exhaustion and heart, liver or kidney failure.^{2,3}

Users of MDMA may experience withdrawal commonly referred to as a “hangover” for up to a week after use. Symptoms can include a profound lack of interest in life and severe depression resulting in significant lethargy, anorexia and decreased motivation.⁶

Animal research has shown moderate to high doses of MDMA can cause long-lasting damage to nerve cells containing serotonin.³

Long-term Effects

After heavy, extended use of MDMA, a person may experience forgetfulness, poor concentration, depression and suicidal thoughts. For some individuals, depression may be experienced after only a few days of use. Users may also experience tiredness, sleeping problems, confusion, panic and paranoia.⁴

Frequent users of MDMA run the risk of liver damage. They may also experience damage to their teeth and jaws as a result of jaw clenching. They may exhibit aggressive behaviour and become violent.⁴

Chronic heavy users of MDMA (60 to 450 lifetime doses) may experience confusion, depression and memory impairment for an extended duration of time, perhaps as a result of reduced serotonin activity.^{3,4}

The potential neurotoxic effects of MDMA represent the greatest concern with its use. Recent research shows MDMA damages neurons in areas of the brain responsible for language, movement and vital functions, such as breathing and heart rate, and also reduces the density of brain tissues in these regions. These effects are believed to be long-lasting and may be permanent.⁶

Toxic Effects

Overdose can occur with use of MDMA, especially with more than one dose. Overdose may present with symptoms of high blood pressure, faintness, panic attacks and, in severe cases, loss of consciousness and seizures.⁶

The most serious toxic effect is hyperthermia. Hyperthermia and dehydration are most likely to occur when drug use is accompanied by vigorous activity (i.e. dancing for several hours without stopping). Prompt medical attention is required to mitigate consequences that can include kidney failure, dehydration, high blood pressure and heart failure.^{3,6}

Tolerance and Dependence

MDMA targets the reward system and is believed to cause both physical and psychological dependence in some users. Despite the potential for inducing dependence, it is uncommon to encounter a pattern of escalating usage with MDMA. Users may adjust their patterns of use in response to the impacts of depleted serotonin stores – subsequent doses may become less effective and users may experience an increase in undesirable side effects rather than the perceived positive effects.^{3,5,6}

Withdrawal

Regular use of MDMA may result in psychological cravings for the effects of the drug if use is stopped. While there is not significant evidence to support withdrawal symptoms caused by physical dependence, users may experience symptoms of fatigue, loss of appetite, depression and difficulty concentrating.³

Illegal Production

MDMA is made in illegal laboratories. It can be mixed with other drugs, chemicals or substances, including caffeine, codeine, acetaminophen, ketamine, methamphetamine, ephedrine and/or the over-the-counter cough suppressant, dextromethorphan, making the effects unpredictable.^{2,3,5}

Legal Issues

MDMA is included in the *Controlled Drugs and Substances Act*. It is illegal in Canada to produce, distribute or possess ecstasy.⁵

The Criminal Code of Canada contains offenses related to driving while impaired by alcohol or other drugs. Manitoba has also enacted legislation to address drug-impaired driving.

Risks & Other Harms

As MDMA is made illegally with a variety of licit and illicit drug combinations and other potentially harmful substances, it is extremely difficult to predict toxicity and the potential medical consequences of its use.¹

Some people may be allergic to MDMA, or other drugs or substances used in its production, causing reactions similar to overdose (high temperature, blood clotting problems, liver problems).⁴

As with many drugs of abuse, MDMA is often used with other substances, including alcohol, increasing the risk of overdose and possible death.^{2,3,5} If it is combined with certain antidepressant medications, a dangerous or deadly increase in heart rate and blood pressure can result.⁴

In addition, abusers who inject the drug expose themselves to additional risks, including contracting human immunodeficiency virus (HIV), hepatitis B and C and other blood-borne viruses.

As is the case in any abuse of licit or illicit drugs, there are potential adverse consequences related to the law, a person's financial situation, family relationships, and generally putting oneself at risk by participating in unsafe behaviours while under the influence of ecstasy.⁵

Pregnancy

The potential adverse effects of MDMA on the fetus are of great concern. Animal studies have demonstrated that administration of MDMA during what would be the equivalent to the third trimester in humans had significant adverse effects on indicators of learning and memory.³

Of the few studies on the effects of club drugs generally, one prospective follow-up study of 136 infants exposed to MDMA in utero showed the drug may be associated with a significantly increased risk of congenital defects. Twelve (8.8%) of the 136 babies in the study had congenital malformations; however, there was no apparent pattern of defects. The study did not include a comparison group, nor did it control for other possible contributing factors.⁸

Other studies have revealed no increased risk for major malformations or spontaneous abortions. When the birth outcomes of 54 women who had used MDMA during pregnancy were compared with 54 unexposed women, no differences were reported in major malformations or spontaneous abortions.⁸

Interventions

There is very little information in clinical literature about treatment for persons who abuse or are dependent upon club drugs generally or MDMA specifically.¹

While MDMA use does not usually predispose to an escalating pattern of abuse, it is commonly abused with other drugs. Thus, the other preferred drug or drugs may become the focus of rehabilitation. Because adolescents are currently the most likely group to abuse this drug, treatment must consider their specific needs and issues. In addition, MDMA can profoundly affect concurrent mental illnesses, such as depression and anxiety. This must be considered when working with a client with identified mental health issues.⁶

Treatment options to support individuals achieve a drug free lifestyle include individual counselling, group therapy, detoxification, inpatient treatment, day treatment, drug therapy and self help groups. Finding the best option for individuals often requires a combination of approaches.⁵

Substance Use & Mental Health

- Substance use and mental health problems can often occur together. This is commonly referred to as a co-occurring disorder.
- Substance use may increase the risk of mental health problems.
- People with mental health problems are at higher risk of developing substance abuse problems:
 - Sometimes they use alcohol and other drugs in an attempt to relieve themselves from mental health symptoms.
 - For most people alcohol and other substance use only covers up the symptoms and may make them worse.

Remember: A person's experience with any drug can vary. Here are a few of the many things that may affect the experience: the amount and strength of the drug taken, the setting, a person's mood and expectations before taking the drug, gender, overall health, past experience with that drug and whether more than one drug is being used at the same time. Using alcohol and other drugs at the same time can also be dangerous.

Sources

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The Addictions Foundation of Manitoba (AFM) offers a broad range of prevention and treatment services for alcohol, other drugs and gambling. These are designed to meet the needs of all Manitobans and include harm reduction and abstinence-based programs.

For more information, contact your local AFM office or visit our website: www.afm.mb.ca.

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