Hallucinogen Use Disorders

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KEYWORDS

• Hallucinogen • LSD • MDMA • Psilocybin • PCP • Adolescent • Treatment

KEY POINTS

- Perceptions among adolescents regarding hallucinogens use are changing. Current trends show there are increasing emergency department presentations from use of these drugs.
- Use of novel hallucinogens, such as 25I-NBOMe, is gaining popularity and can have serious medical complications.
- Hallucinogen use may result in psychiatric disorders that may occur at time of use or afterward and may cause secondary psychotic, mood, or anxiety disorders. Limited data exist regarding treatment of these psychiatric disorders in adolescents, and evidence is extrapolated from adult studies. Benzodiazepines and behavioral techniques are recommended first-line treatments. Certain antipsychotics may worsen hallucinogen disorders and should be used with caution.

INTRODUCTION/BACKGROUND

Hallucinogens have been used throughout history to serve various functions in different cultures. For example, native populations have incorporated use of hallucinogens into cultural practices over centuries.[1] Hallucinogens may be found in nature, but over the past century, novel agents have been synthesized, creating a wide array of effects, and manufactured in different preparations and formulations.[2,3]

Today, these psychotomimetic substances are gaining popularity among US youth as club drugs because they induce "trips" and other experiences for its users that are often pleasurable. Although banned by US federal law for use among the general public, certain native groups are protected by the American Indian Religious Freedom Act, enacted in 1994 by the government, for use in religious ceremonies and centuries-old rituals.

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The classical definition of a hallucinogen, as defined by Hollister in 1968, states that the substances predominantly cause changes in thought, perception, and mood with minimal intellectual or memory impairment. In addition, hallucinogens should induce minimal craving.[4] The members of this drug class have been shown to be agonists at the same receptor class in the brain. Common classical hallucinogens include lysergic acid diethylamide (LSD), psilocybin (mushrooms or "shrooms"), and mescaline/peyote. Other popular drugs that produce similar effects to classical hallucinogens act via other receptors and mechanisms. Among these are phencyclidine (PCP) and 3,4-methylenedioxy-methamphetamine (MDMA), a street drug that has gained popularity among today's youth and is increasingly recognized for its hallucinogenic properties.[5]

The Drug Abuse Warning Network (DAWN) monitors presentations to emergency rooms secondary to substance use. Over nearly the past decade, intoxications secondary to hallucinogens, and specifically use of PCP by adolescents, that have reached the attention of an emergency room clinician have been on the increase. Perceptions about hallucinogens among youth are changing. The current trends in hallucinogen use now raise clinical concern and make recognition and treatment of the clinical effects of these drugs more essential.

Efforts have been made to ascertain the public health impact of hallucinogens and have typically targeted use of LSD, psilocybin, and mescaline in data reporting.[6–9] The Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5), published by the American Psychiatric Association categorizes hallucinogens into 2 categories: those related to PCP use and those related to use of other hallucinogens.[10] For the purpose of this review, the aforementioned substances are included in addition to MDMA, given its popularity of use and impact on the adolescent population.

EPIDEMIOLOGY

Governmental organizations and academic groups, such as DAWN, monitor the use of substances by adolescents in the United States. These data have been reported in the National Survey on Drug Use and Health (NSDUH) and the Monitoring the Future study (MTF) among others. Over the past decade, there has been a declining rate in general substance use among adolescents. In 2011, up to 1 in 4 adolescents have been noted to use alcohol and 1 in 5 adolescents have used an illicit drug. It is also notable that rates of illicit drug use and misuse and abuse of pharmaceuticals have remained stable over the period of 2004 to 2011.[6]

The MTF study is an annual survey of 8th, 10th, and 12th graders among whom striking trends for LSD use have been noted. Since the late 1990s, adolescents have reported decreasing use of this substance. Adolescents perceived that LSD is less available and reported decreasing use during this period. At the same time, adolescents perceive LSD use to be less risky than prior years, and rates of disapproval of its use are decreasing.[11] The NSDUH, produced by the Substance Abuse and Mental Health Services Administration, monitors trends in alcohol, tobacco, and illicit substance use among individuals 12 and older. This study shows similar trends regarding LSD particularly in reported prevalence and perceptions of use[6] (**Fig. 1**).

It has been argued that MDMA use has decreased across the United States since the early 2000s. However, the DAWN report found that Emergency Room visits involving MDMA in patients younger than 21 more than doubled, from 460 visits in 2005 to 10,176 visits in 2011. It is also of note that from 1999 to 2008 it was more likely to be used by girls than by boys.[12] Another study found that 4.4% of high school seniors across the United States have tried MDMA within the past year.[13] These data underscore the clinical relevance of this drug.