

Evaluation of Physical and Psychological Effects of Inhalant Abuse among Adolescents

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Background

Inhalants are toxic substances found in a variety of readily available household and commercial products that have psychoactive or mind-altering properties. According to the American Association of Pediatrics, nearly 20%, or one out of five of all eighth graders have experimented with some type of an inhalant. In addition, as of 2013, the prevalence of inhalant usage in young adolescents aged 12 to 17 years old is higher than usage rates for all illicit drugs except for marijuana. The Student Committee on Drug Abuse Education (SCODAE) is an organization at the University of Maryland School of Pharmacy in Baltimore, Maryland, that provides education on drug information to middle school and high school students in Maryland. The SCODAE Manual contains information on addiction for the following substances: (1) marijuana and psychedelic drugs, (2) alcohol and depressant drugs, and (3) cocaine and stimulant drugs. However, the manual lacked a section on inhalant abuse. This literature evaluation sought to investigate the physical and psychological effects associated with inhalant abuse with the eventual goal of adding to the manual for educating on inhalant abuse.

Objectives: To summarize the common methods of inhalant abuse and to investigate the physical and psychological effects associated with inhalant abuse.

Methods

A search was conducted using PubMed and Medline to compile a list of commonly abused inhalants. The inhalants were then classified into categories based on their methods of abuse and physical properties. For each category of inhalants, the following data were collected: pharmacology, toxicity, and risks associated with abuse.

Results

A total of six categories of inhalants were identified: (1) volatile solvents, (2) aerosols, (3) medical and household gases, (4) nitrites, (5) free bases, and (6) combustible substances. Common methods of abuse for inhalants included: sniffing, bagging, huffing, and dusting. Volatile solvents are the most diverse group of abused inhalants, and their intoxication resembles alcohol intoxication, with stimulation and disinhibition followed by depression. Aerosols include many sprays and foams that are common household and industrial products, and contain toluene, which can damage the CNS, and cause encephalopathy, euphoria, hallucinations, nystagmus, seizures, and coma. Medical and household gases include medical anesthetics and butane lighters, and can cause peripheral neuropathy and short-term memory loss. Nitrites include leather cleaners and amyl nitrites, and can cause tachycardia, pulsatile headache, and hemolytic anemia. Among free bases, cocaine was abused most often, which leads to euphoria and hypermotility, which are positive effects that can lead to reinforcing behaviors. For combustible substances, electronic cigarettes were commonly abused, and can lead to issues such as mouth and throat irritation, and dry cough.

Conclusion

Toxicities from inhalant abuse can cause detrimental health effects and can even lead to death. Since the prevalence of inhalant abuse is the highest in adolescents, student pharmacists can play a key role in educating middle and high school students on the health risks associated with inhalant abuse, which may help reduce inhalant abuse among adolescents.