



## Review Article

### Drug Abuse Trend and Profile of Current Social Crisis

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#### Abstract

This article reviews the historical trend of substance abuse in USA and how it has led to current public health crisis and offers example of potential future solution. The national drug policy was unable to implement safeguards to the drug manufacturers, marketers, and protect potential and current drug-using population. Although recently popular expansions of the accessibility of the opioid overdose antidote naloxone are quite useful, the additional answers are also needed based on further research on genetics, molecular biology, neuropharmacology, and brain imaging.

**Keywords:** Brain research; Drug policy; Opioid overdose; Substance abuse history

#### Introduction

The “War on Drugs,” which began in the 1970s as a major national drug policy, has had practically no intended influence on drug manufacturers, marketers, and the drug-using population. Because drug choices are being driven by a host of complex social psychological factors, the policy, which predominantly focused on suppressive methods by overvalued domestic law enforcement, has had negative and unintended effect on overall drug-use abstinence and prevention of related liabilities. According to Jaffe [1], accidental drug overdose fatality tripled in the past decade-making it the nation’s second leading cause of accidental death. More than 115 people in the United States die after overdosing on opioids each day [2]. The abuse of and addiction to opioids (including prescription pain reducers, heroin, and synthetic opioids) is a serious American crisis that threatens public health and social and economic welfare. The Centers for Disease

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Control and Prevention estimates that the total “economic burden” of prescription opioid misuse alone in the United States is \$78.5 billion a year, including the costs of healthcare, lost productivity, addiction treatment, and criminal justice involvement [3].

Among states with rising numbers of illicit drug users, it is clearly the leading public issue. Prescription painkiller overdose deaths (opioid analgesics like OxyContin, Methadone, and Vicodin) accounted for almost half of over 36,000 total fatal overdoses in 2006. This pattern of fatalities coincided with a nearly 400% increase in the use of prescription opioids nationally [4]. In 2015, more than 33,000 Americans died as a result of an opioid overdose, an estimated 2 million people in the United States suffered from substance use disorders related to prescription opioid pain relievers, and over 590,000 suffered from a heroin use disorder [5].

Even with recently expanded over 15,000 specialized drug treatment facilities in the US, a relentless flood of new illicit drugs and intense demands are overwhelming the nation’s drug control intervention system. Every new federal, state, and local drug laws and regulations are continually being monitored by drug manufacturers, and are often obsolesced by the time of their adoption and implementation of renewed and modified policies [3].

#### Historical trend

Looking back thirty years ago, major patient population among US substance abuse treatment facilities were mostly white males, thirty-five or older who were suffering from an alcohol dependency. Beginning late 1990s, pharmaceutical companies misinformed the medical community that patients would not become addicted to prescription opioid pain relievers, and healthcare providers began to prescribe them at greater rates [6,7]. In contrast to previous years, today substance abuse patients are half female, eighteen to eighty, and there would hardly be solely alcoholic individuals. Approximately 40 percent of over 730,000 substance abuse treatment admission assessments indicate that clients are suffering from drug and alcohol abuse combinations [8]. The accesses to a variety of substances, including prescription medications, have prompted notable changes in the nation-wide addiction problems. The challenges of the development of newer and stronger drugs keep emergency rooms on edge while drug test companies were at work creating new altered forms of medications and designer drugs.

SAMHSA [9], issued an alarming report that in an estimated 119 million Americans aged 12 or older, who used prescription psychotherapeutic drugs during 2014, represented over 44 percent of the US population. Over 97 million people used pain relievers, approximately 39 million used tranquilizers, about 17 million used stimulants, and over 18 million used sedatives. During the same year 2014, estimated 18 million people aged 12 or older misused prescription psychotherapeutic drugs in the previous year. The number of misuse included over 12 million people-six million who misused tranquilizers, over five million who misused stimulants, and over one million who misused sedatives. Overall, however, most people (estimated

84 percent) who used prescription drugs during 2014 did not misuse them.

### Age and stage

One of the most serious trends in the substance abusing population is the age of the onset of drug use. Today the average age of onset is twelve years of age and young adults aged 15-24 years is showing over 113% increase in unintentional drug overdose fatality, and most states and local facilities are incapable of reversing this growing epidemic [1]. The use of mind altering, mood-enhancing chemicals before puberty and adolescent development is resulting in more serious subsequent consequences for a substantial number of individuals. Thus, the need for prevention and intervention for teens is now one of the most important aspects of contemporary substance abuse professional training [9].

Along with much earlier use of drugs comes the change in the role of gender in treatment intervention. Girls have caught up with boys during the teen years for abusing drugs and for selling drugs, and later as adults many are beginning to take drugs on a regular basis. Correspondingly, Kantor et al. [10], reports that between 1999 and 2004 among white women, unintentional drug-related deaths increased by an amazing 136%. Although there is a lag-time between the age of first use of illicit drugs and potential overdose fatality, it is expected that as more girls begin using drugs at earlier ages, young women will increasingly suffer from drug overdose and many will bear the ultimate consequence.

On the other end of the age range are the “baby boomers” that are born from 1943 to 1960, which was the first generation to grow-up in a social culture of recreational drug use and the tendency towards demanding pain reduction through medication. Among them almost 90% of drug users initiated use before age 30 and many have been continual users since their teen years. This cultural normalization of the use of substance is creating a much more accepting perspective on the use of alcohol and other drugs for the older adults who are now free of raising children and moving into retirement with substantially increased opportunity for social leisure as well as solo activities. Consequently, the number of individuals needing treatment for a substance abuse disorder is estimated to double among persons aged 50 or older as the baby boom generation moves into older adulthood. Reported illicit drug use by 50-59 year olds has also nearly doubled from 5.1% in 2002 to 9.4% in 2007 [11].

### Addiction to prescription medication and cocaine

As noted previously a major trend of the drug problem in this country today is the misuse and abuse of prescription medications, most frequently taken as available painkillers. The increase in the misuse of prescription medications challenges the healthcare system and puts primary care providers on alert for maintaining an ethical judgment between prescribing appropriately for pain management versus enabling dependence and addiction.

Centers for Disease Control and Prevention [12], recently reported distressful findings. In 2008, there were 14,800 prescription painkiller deaths-more than 40 per day. For every death, there are an estimated 825 non-medical users of painkiller prescriptions. In 2010, an average of 5,500 people per day admitted using prescription painkillers non-medically for the first time. Approximately 70% of these individuals obtained the painkiller drugs from friends or relatives for

free, bought them, or stole from them [13]. According to the results of a recent Massachusetts survey, more than half of the parents (56%) indicated that their kids have access to their (parents’) prescription medications, and one in seven parents (14 percent) have provided their children with pain medication that was not prescribed for them [14].

According to a recent study findings adults over 50 years old more often tend to ignore reading prescription drug warning labels compared to a younger age group-ages 20 to 29 [15]. Older users were less likely to recall the warning labels, frequently because they had not noticed them in the first place. Unfortunately, there are no federal regulations that manage the format for prescription warning labels. The researchers also note that the findings are particularly important because older adults take more medications than younger ones, which puts them at greater risk of committing unintentional drug misuses.

### Marijuana usage

Marijuana continues to be a drug of choice for young American teens and adults. Marijuana use now is also more common than non-medical use of prescription drugs for adults 50-59. Studies suggest that it is continued use habit behavior that initiated the use during their youth, stopped using, and restart again in their fifties [16]. There are, however, three major differences in today’s use of marijuana-the chemical strength, the age of use, and a trend towards the legalization of recreational use. The researchers at University of Mississippi’s Potency Monitoring Project compared the average amount of THC, the psychoactive ingredient in marijuana, in samples seized by police and customs in the US, from 1975 through to 2007. Based on their findings, it has been noted that the strength of the marijuana today is significantly greater than in the 1970s-by as much as 14 fold [16].

Although current parents in the 1970s started smoking pot when they were 16 to 18 years of age, today a substantial number of youth start as young as age 12. In fact, over one-half (57 percent) are under 18 [17]. Based on their assessment, the rising marijuana use reflects shifting perceptions and beliefs among potential users-young people again are showing less disapproval of marijuana use and decreased belief that marijuana is dangerous. Consequently, more than half of new illicit drug users in this country begin with marijuana. In 2010, 23 percent of 18- to 20-year-olds reported using an illicit drug in the previous month and significant majority selected marijuana as their preferred choice [17].

The growing perception of marijuana as a “safe drug” reflects recent public discussions and approval as medical alternative. The debate about medical marijuana was initially publicized by the state of California [18].

In contrast, the recent voters in California, Colorado, Washington, and Massachusetts passed the measures to allow the possession and sale of marijuana for recreational use. The measures allow personal possession of up to an ounce of marijuana for anyone at least 21 years old [19]. California permits recreational marijuana to be sold and taxed at approximately 100 state-licensed stores. Colorado Amendment also legalized individuals 21 and older to buy up to an ounce of marijuana at retail stores that are regulated. Washington’s initiative is similar and legalized adults 21 and older to buy up to an ounce of dried marijuana, or small amounts of marijuana-infused products. In Massachusetts, residents are allowed to cultivate marijuana in their:

- Backyard as long as it's secured and can't be seen from the street without binoculars;
- Indoors-each household can grow six plants, or up to 12 if two or more adults reside [20].

### Synthetic drugs in vogue

As reported by Van Pelt [21], new types of legal, easily available recreational drugs are resulting in a huge number of users suffering from serious physical harm and fatality. Today, anyone other than child can visit a convenience store, gas station, or "head shop" and legally purchase synthetic drug for less than \$50. The synthetic drugs are also available through internet based shops, which is spurring an increasing trend in substance abuse purchase. A recently popular synthetic drug Methylone (a key ingredient in "bath salts") is simple to order online from China and other countries. According to a report by The Partnership at Drug free [18], in a recent case that ended up in federal court, two Virginia men e-mailed a lab in China, wired several thousand dollars to an English-speaking customer service representative, and received 100 pounds of the drug in the mail (street value of an estimated \$560,000). Methylone is a white crystalline powder, which, in addition to being used to make bath salts, can also be snorted or mixed into drinks.

Methylone was legal in most states in the United States until recently, and was widely sold online and in various shops and convenience stores. Bath salts are sold under street names such as "Ivory Wave," "Purple Wave," "Vanilla Sky," or "Bliss." The drugs induce similar effects to cocaine, LSD, ecstasy, and methamphetamine [18].

Synthetic marijuana could also be obtained legally until recently and is still often wrongly perceived as being a safe option to marijuana. According to a national Monitoring the Future survey designed to assess drug, alcohol, and tobacco use and related attitudes among 8<sup>th</sup>, 10<sup>th</sup>, and 12<sup>th</sup> graders, more than one in nine 12<sup>th</sup> graders (11.4%) reported using synthetic marijuana during 2011-making it the second most used illicit drug used among American high school seniors [17]. Numerous users of this new synthetic marijuana have reported disorientation, extreme paranoia, impaired perception, reduced motor control, and violent episodes. Regrettably, both synthetic marijuana and bath salts have become increasingly popular among teens and young adults. According to federal agents, parcels sent to the United States are subject to inspection, but drug-sniffing dogs typically cannot sense Methylone and other synthetic drugs, [22].

Despite recent prohibitions of selected ingredients by the US, Drug Enforcement Administration, many synthetic drugs still remain lawful due to countless number of possible formulations. Drug manufacturers can simply swap to other "not yet illegal" synthetic chemicals that are marketable to substance users. Additionally, because they are often legal, synthetic drugs may be perceived as safe. Consequently, these substances are contributing to a rapid growth in associated fatalities and hospitalizations [23].

According to the American Association of Poison Control Centers [24], overall calls related to synthetic drugs increased by 400% from 2010 to 2011; calls relating to synthetic bath salts snowballed by more than 2000%. Although synthetic drug users typically have been adults over the age of 30, 60% of cases involved individuals aged 25 and younger [21]. Consequently, a number of states have begun aggressively banning synthetic drugs, and more are expected to followed suit.

### Strategic response to the current crisis

As noted previously, because drug choices are being driven by a host of complex social and environmental factors, the national and local drug policy that is focused on controlling distribution and abuse through domestic law enforcement is unable to reverse the overall US, trend. Prescribing physicians are also challenged with a dilemma of appropriate treatment versus suspicion of patients' illicit demands. A number of state policies are addressing this problem through statewide drug monitoring programs, safe means of disposing leftovers, stepping up law enforcement efforts, and boosting patient education. A recently developed Prescription Drug Monitoring Program (PDMP), for example, is a statewide electronic database that collects designated data on substances dispensed in the state and is supervised by a specified statewide regulatory, administrative, or law enforcement agency [25].

### Response example-commonwealth of Pennsylvania

Recently Pennsylvania has made the fight against opioid abuse and heroin use a top priority by substantially increasing the funding to addiction treatment programs, improving availability of naloxone for families, first responders, and to others, and further enhancing coordination and data collection to improve the state and local response [26]. The state governor also signed legislation that limits the number of opioids a patient can receive at emergency rooms to a seven day supply with no refills, and put the same restriction in place for minors no matter where they get a prescription. The governor also launched following requirements:

1. A prescription drug monitoring program to allow prescribers and dispensers to monitor who is obtaining opioids, who prescribed the prescriptions, and how often they are prescribed;
2. A facilitative policy to get those who have overdosed directly into treatment;
3. Improving prescribing guidelines for the safe and effective use of opioids;
4. A 24/7 helpline for those who need immediate assistance with drug and alcohol problems.

While it is anticipated that such efforts will not completely solve the opioid abuse, Pennsylvania is focused on making a significant progress on reducing the public health crisis.

### A future of drug rehabilitation efforts

According to NIH [27], recent scientific assessments in genetics, molecular biology, neuropharmacology, and brain imaging are offering critical new understanding into how drug affects human brain and human behavior. Drug addiction evokes an obsessive drive to take a substance despite its understood potential for severe or serious consequences. This anomalous behavior has been traditionally perceived as a "bad choice" that is made voluntarily by the addicted person-a view that has propagated the stigma of addiction as an individual's moral breakdown and stupidity. Addiction researchers, however, have learned in recent years from converging study findings that chronic drug use predictably alters the brain in ways that can lead to the loss of self-control and commencing of unanticipated risky behavior [28-30]. These discoveries are helping addiction researchers to realize why so many recovering individuals relapse even in the face of threats of serious liabilities such as an incarceration and overdose death.

Thus, the convergent research results are in support of an insight that drug addiction is a disease of the brain and that the associated aberrant behaviors are the result of altered or dysfunctional brain function.

Based on these evidence-based research results, National Institute of Health [27], notes following suggestions for future support:

- Promote research that examines key risk and protective factors influencing opioid abuse and addiction risk and develop new approaches, medications, or formulations for treating pain with less or no risk of abuse;
- Build on the success of effective but grossly underutilized medication-assisted treatments for opioid addiction and integrate them into the evolving healthcare reform efforts to increase patient retention and decrease drug use, transmission of infectious disease, and criminal activity.

Although recently popular expansions of the accessibility of the opioid overdose antidote naloxone are quite useful, the additional answers are also needed based on further research in areas of genetics, molecular biology, neuropharmacology, and brain imaging. Additionally, as addiction researchers learn more about the neurobiology of normal and pathological brain functions, a challenge is how to incorporate such findings on future drug rehabilitation and related intervention programs.

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