

## **Substance Use Disorders Among Adolescent- An Emerging Problem: A Review**

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### **I. Introduction**

Adolescence is the period of maturation between childhood and adulthood heralded by the physiological signs and surging hormones of puberty.WHO defines age group 12-19 yrs.Adolescence is largely a time of exploration and making choices, a gradual process of working towards an integrated concept of self. Adolescents/young adults have higher rates of substance use and use disorders than older adults.Earlier onset of substance use predicts greater addiction severity and morbidity.Drug abuse among adolescents is a cause of concern because use in this age group is associated with increased risk of accidents, violence and high-risk sexual behaviour.

Co-morbid psychiatric disorders are also more common in adolescents who have substance use disorder<sup>1</sup>.

### **II.WHO current concern**

WHO guidance on the full spectrum of health issues affecting adolescents included tobacco, alcohol and drug use in addition to HIV, injuries, mental health, nutrition, sexual and reproductive health, and violence<sup>2</sup>.

### **III. USA Status in 2010**

In the United States—persons ages 12 and older, 8.9% have used any illicit drug , 6.9% have used marijuana, and 2.7% have used prescription type psychotherapeutic drugs non-medically while 51.8% had alcohol in the past month<sup>3</sup>.

### **IV. USA Status in 2011**

In US, 20.1% of 8th grade students, 37.7% of 10<sup>th</sup> graders, and 49.9% of 12th graders, have tried an illicit drugs while 33.1% of 8<sup>th</sup> graders reported having ever tried alcohol, 56.0% of 10th graders, and 70.0% of 12<sup>th</sup> graders<sup>4</sup>

### **V. DAMS Report**

Drug Abuse Monitoring System (DAMS) provided data from treatment seekers from 203centres providing services to drug users in India. It reported that 0.4% of treatment seekers in de-addiction centres in various states were less than 15 years of age and 4.6% of the substance users were between 16-20 years of age.Among users of heroin, cannabis and propoxyphene, 0.5 to 0.8% were in the age group below 15 years. The proportion of alcohol users in this age group was comparatively low. The percentage of users of propoxyphene was the highest.

Adolescent treatment seekers were more often users of propoxyphene, heroin and cannabis.There was a regional variation in the drug of use.Adolescent propoxyphene users were mostly from Mizoram and Manipur.Heroin users were more often reported from Punjab, Haryana, Bihar and Orissa.Chandigarh had the highest proportion of young cannabis users<sup>5</sup>.

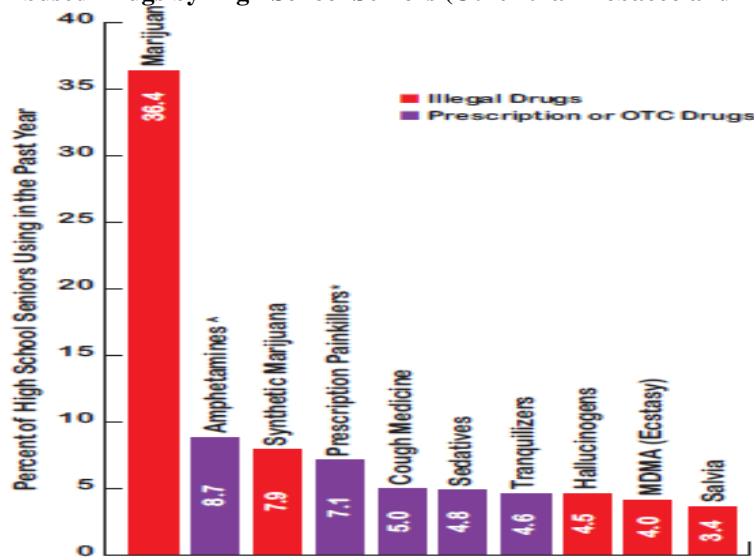
### **VI. North-eastern IndiaStatus**

A wide spread prevalence and acceptance of drug use from heroin to the most commonSpasmo-Proxyvon.Prevalence of ever users of inhalants among school-going children of northeast is 18.8%<sup>6</sup>.

### **VII. Status of Higher secondary school students of Imphal, Manipur**

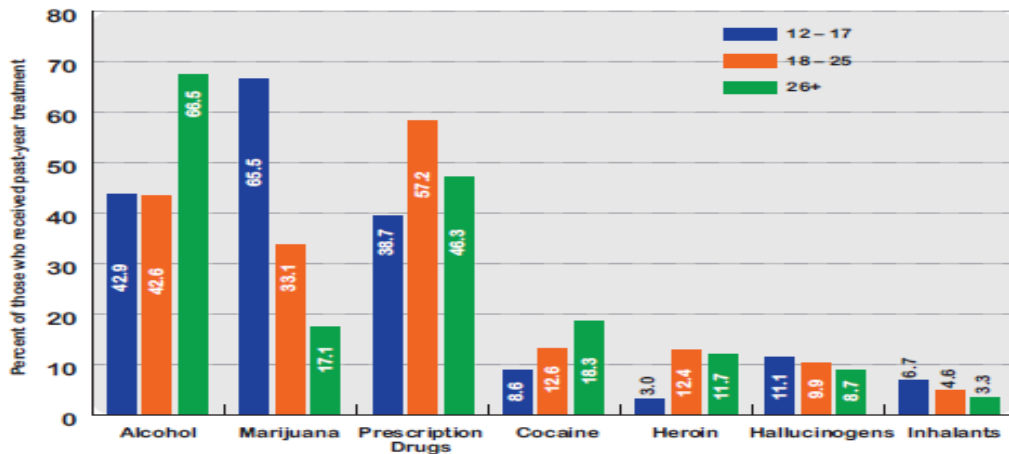
The study surveyed 1020 students, 551 of whom reported prior substance use .Prevalence of recent and current user was 35% and 22% respectively. Among ever users, tobacco was used most commonly, followed by alcohol , cannabis and opiates. substance use was significantly higher among boys than the girls<sup>7</sup>.

**Most Commonly Abused Drugs by High School Seniors (Other than Tobacco and Alcohol)**



Source: Monitoring the Future National Results on Adolescent Drug Use: Summary of Key Findings, 2013<sup>8</sup>.

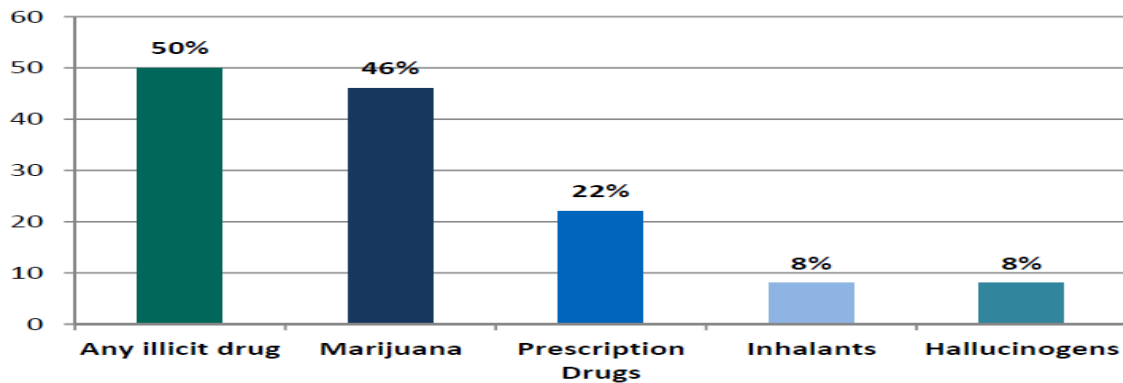
**Adolescents Differ from Adults in Substances Most Abuse**



Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2013<sup>9</sup>.

**Lifetime prevalence of drug use**

Lifetime prevalence of drug use among 12th graders, 2011



Source: Johnston, L. D., O'Malley, P. M., Bachman, J. G., &Schulenberg, J. E. (2012). Monitoring the Future: Nationalresults on adolescent drug use: Overview of key findings, 2011. National Institute on Drug Abuse<sup>10</sup>.

Age of Onset of Alcohol Consumption Predicts Later Abuse and Dependence

Age of Onset	Lifetime Dependence: % (Standard Error)	Lifetime Abuse: % (Standard Error)
12 or Younger	40.6 (2.1)	8.3 (1.1)
13	41.3 (2.7)	11.5 (1.8)
14	40.8 (1.9)	13.8 (1.5)
15	38.7 (1.4)	11.9 (0.9)
16	30.6 (0.9)	10.6 (0.7)
17	24.5 (1.0)	9.5 (0.6)
18	16.6 (0.6)	7.8 (0.4)
19	16.5 (1.0)	6.3 (0.3)
20	11.4 (0.8)	4.8 (0.5)
21	10.0 (0.6)	4.8 (0.4)
22	9.5 (1.1)	4.9 (1.0)
23	14.7 (1.9)	3.6 (0.9)
24	13.6 (2.1)	3.1 (1.0)
25 or Older	7.9 (0.6)	2.5 (0.4)

Younger onset of alcohol consumption correlates with higher rates of lifetime substance dependence and abuse Grant and Dawson, 1997

**VIII. Why do adolescents take drugs?**

1. To fit in: acceptance to his peer group
2. To feel good
3. To feel better
4. To do better
5. To do experiment

**IX. How does it lead to substance use disorder?**

- Psychosocial risk factors mediating the development of substance use disorders include
  1. parent modeling of substance use,
  2. family conflict,
  3. lack of parental supervision,
  4. peer relationships, and
  5. individual stressful life events

**X. Developing adolescent brain**

The pioneering research of Jay Giedd and colleagues(2004) showed that the brain is still developing during adolescence. The pruning that occurs during adolescence has two principles. One is ‘ use-it-or-lose-it’ that is the nerve cells that are frequently used during childhood are strengthened and the ones that are not activated or are infrequently used are eliminated. The second principle is that it tends to occur in the direction of back to front of the brain. The maturation of brain structures generally occurs from the back of the brain to the front. Four primary brain structures from the back to the front of the brain – cerebellum, nucleus accumbens, amygdala and prefrontal cortex. That makes adolescents. Preference for physical activity. Less than optimal planning and judgment. More risky, impulsive behaviours. Minimal consideration of negative consequences

**XI. Vulnerability to drug use**

Brain systems governing emotion and reward-seeking are fully developed by this time but circuits governing judgment and self-inhibition are still maturing. The adolescent brain is often likened to a car with a fully functioning gas pedal (the reward system) but weak brakes (the prefrontal cortex) All drugs that can lead to dependence, increase dopamine(DA) in ventral striatum, also called the nucleus accumbens. Natural ways to trigger our mesolimbic dopamine neurons to release dopamine, ranging from intellectual accomplishment to athletic accomplishment, to enjoying a good symphony, to experiencing an

orgasm. All psychotropic drugs of abuse also have a final common pathway of causing the mesolimbic pathway to release dopamine, often in a manner more explosive and pleasurable than that which occurs naturally. Adolescence is normally thought of as a healthy time of life with low morbidity and mortality rates as compared with other times of life. Teenagers and young adults make fewer physician visits than any other age group and have relatively low levels of disability, illness, and death<sup>11</sup>.

### XII. Alcohol problem

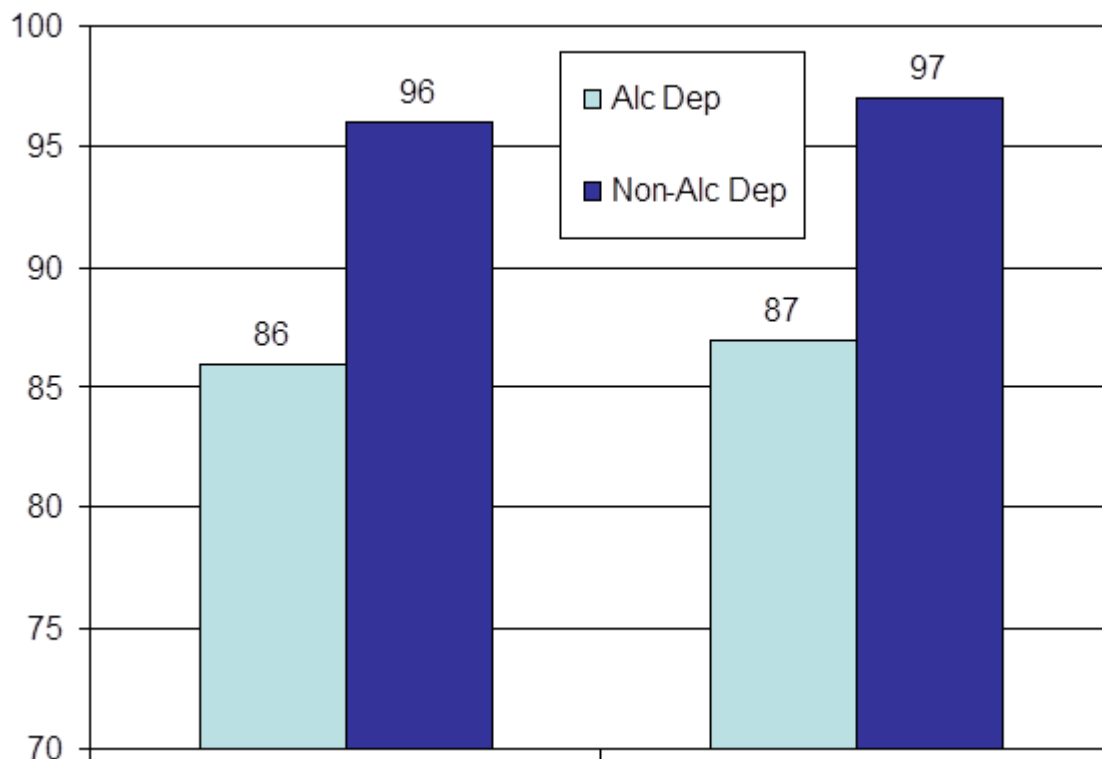
Adolescents who have recently recovered from an alcohol dependence disorder revealed poorer performance on verbal and nonverbal memory compared to a control group with no history of alcohol dependence (Brown et al 2000). Early use of alcohol is a risk factor for developing alcohol problems; in addition, motor vehicle collisions related to teen alcohol use are among the most common causes of teen death<sup>12</sup>.

### XIII. Binge Drinking

30-40% of college students are binge drinkers 10-20% drink more than twice the binge threshold<sup>13</sup>. Heavy binge drinking reduces decision-making skills Especially ages 18-19<sup>14</sup>. Heavy college drinking is associated with greater use of other illicit drugs, including cocaine, amphetamines, and analgesics<sup>15</sup>. Heavy college drinking is associated with risks of Later alcohol dependence and abuse and Early departure from college/attrition<sup>16,17</sup>.

#### Human Data: Alcohol's Effects

Adolescents with a history of an alcohol use disorder may show deficits in short-term memory.



An average of 10% less memory in the alcohol dependent youth compared to the healthy youth<sup>18</sup>.

### XIV. Co-morbid psychiatry disorders

- Serious mental health problems often are a factor in drug abuse and suicide. Suicidal behaviour, especially while being under the influence of the substance is commonly reported in adolescents following substance use or those diagnosed as Substance use disorder. A number of psychiatric disorders are commonly associated with Substance use disorder in youth. The most common are conduct (50 to 80%) and mood disorders, including major depression and bipolar disorder. The prevalence of depressive disorders ranges from 24% to 50%.

- Anxiety disorders are another commonly diagnosed group of disorders in substance using adolescents with prevalence ranging from 7% to 40%. Social phobia usually precedes substance abuse while panic and generalized anxiety disorder more often follow the onset of SUD. Adolescents with SUD often have a history of Post Traumatic Stress Disorder (PTSD) consequent to a history of physical or sexual abuse. The prevalence of depressive disorders ranges from 24% to 50%. Anxiety disorders are another commonly diagnosed group of disorders in substance using adolescents with prevalence ranging from 7% to 40%. Social phobia usually precedes substance abuse while panic and generalized anxiety disorder more often follow the onset of SUD. Adolescents with SUD often have a history of Post Traumatic Stress Disorder (PTSD) consequent to a history of physical or sexual abuse. The prevalence of depressive disorders ranges from 24% to 50%. Anxiety disorders are another commonly diagnosed group of disorders in substance using adolescents with prevalence ranging from 7% to 40%. Social phobia usually precedes substance abuse while panic and generalized anxiety disorder more often follow the onset of SUD. Adolescents with SUD often have a history of Post Traumatic Stress Disorder (PTSD) consequent to a history of physical or sexual abuse. Bulimia nervosa and gambling behaviour are also commonly found in adolescents having SUD.
- Substance use disorders were seen in 26.6% of adolescents suffering from major depression. Cigarette smoking was seen in 16.6%, alcohol abuse in 6.6% and inhalant abuse in 3.3% of adolescents<sup>19</sup>.
- Many mental health disorders are also linked to illicit drug use, including depression, anxiety, paranoia, hallucinations, developmental delays, delusions, and mood disturbances. One bothersome factor is the progressive decline in the age of initiation. Early initiation is often associated with poor prognosis and a lifelong pattern of irresponsible behaviour<sup>20</sup>

#### **XV. Low Academic Performance**

Learning may be adversely affected by drug use during adolescence, particularly when use is frequent and heavy.<sup>21</sup> Substance abuse in adolescents is a barrier to successful academic performance and academic achievement. Smokers as well as alcohol and other drug users, even those who have even used these substances once, tend to have worse scores and weaker school performances than other students<sup>22</sup>.

#### **XVI. Low Self Esteem**

Studies have shown that since unsuccessful students did not have sufficient successful experiences, they underestimated their own abilities and talents. The self-esteem in these type of students was very low<sup>23</sup>.

#### **XVII. Drop Out From Studies**

A study of profile of 52 subjects seen in the Drug Dependence Treatment Centre of AIIMS in the year 1999-2003 (Malhotra, personal communication) and 21 subjects seen in 2004 and 2005 (Dhawan, personal communication) found that all were male in the age range of 13-18 years with most initiating substance use at or below 15 years of age. About half of them were currently neither studying nor working, while some were students.

#### **XVIII. Sleep Disturbance**

Vignau et al. found that poor sleep was related to alcohol inebriation in 763 French adolescents, regardless of gender. Adolescents who use illicit drugs are more likely than other adolescents to engage in risky sexual behaviour, or be involved in delinquency and crime<sup>24</sup>.

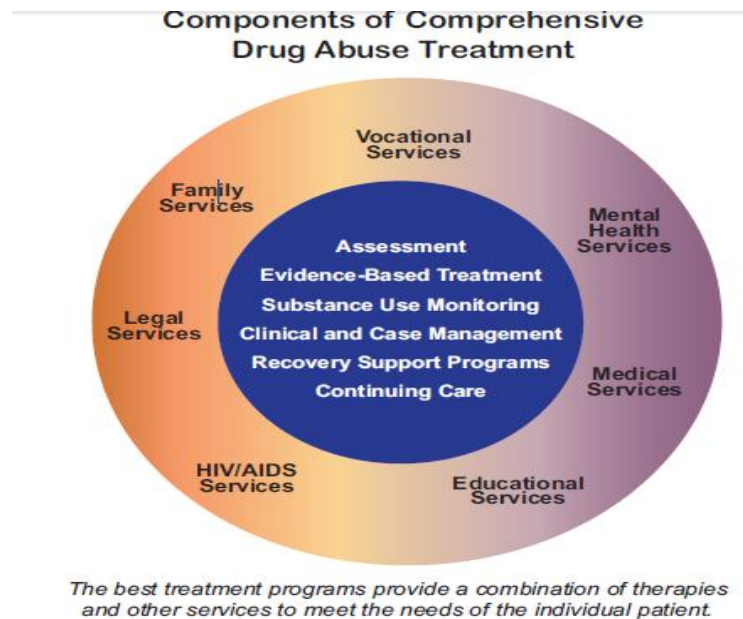
#### **XIX. Family Conflict And Physical Problems**

Furthermore, illicit drug use can affect relationships with family and friends by causing adolescents to be unreliable, forgetful, dishonest, or violent; it can also put them at increased risk for being a victim of violence. Numerous physical problems are associated with illicit drug use, depending on the type of drug used. These problems can include, in the short term, lung failure, heart attack, and heart failure, and in the long term, obesity, lung and cardiovascular disease, stroke, and cancer<sup>20</sup>.

#### **XX. Premature Death**

One of the primary causes of death among teenagers in the United States is drunk driving, accounting for more than 20 percent of all mortalities<sup>25</sup>. The effects of tobacco smoking (e.g., heart disease, lung cancer) are the leading cause of death among all Americans and will probably be responsible for killing more current children and teenagers later in their life than any other single cause<sup>25</sup>. The intervention in substance using adolescents requires involvement of parents as well as teachers. The family needs to be counselled about nature of treatment and the process of recovery.

- Less intensive intervention may be required for those with structured lifestyle, absence of psychopathology, and those who have not yet become dependent on the substance.



### XXI. Preventive programs

1. Universal programs are designed for the general population, such as all students in a school.
  2. Selective programs target groups at risk, or subsets of the general population such as children of drug abusers or poor school achievers.
  3. Indicated programs are designed for people who are already experimenting with drugs.
- Risk and protective factors are the primary targets of effective prevention programs used in the family, school, and community settings

#### ✚ Family-based prevention programs should

1. enhance family bonding and relationships and include parenting skills;
2. practice in developing, discussing, and enforcing family policies on substance abuse; and
3. training in drug education and information.

#### Preventive programs In school

- For elementary school children should target improving academic and social-emotional learning, address risk factors for drug abuse, such as early aggression, academic failure, and school dropout.
- For middle or junior high and high school students should increase academic and social competence.

#### Community level

- Prevention programs work at the community level with civic, religious, law enforcement, and other government organizations to enhance antidrug norms and pro-social behaviors.
- Strategies to change key aspects of the environment are often employed at the community level.

### XXII. Treatment Programme

1) ORAL SUBSTITUTION THERAPY: A) BUPRENORPHINE B) MMT

Sarah K et al found that there is reduction of psychopathology among adolescents who remain under treatment with buprenorphine<sup>26</sup>. Carieb. Oser et al found his study that individuals residing in rural communities may face additional barriers to receiving treatment services and that criminal involvement is associated with participation in peer recovery support groups and treatment<sup>27</sup>.

#### What Works

- Motivational Enhancement Therapy (MET)

- Motivational Incentives (Contingency Management)
- Relapse Prevention
- Cognitive Behavioral Therapy

#### What Does Not Work

**Confrontation** -confrontation is only effective if it is perceived as concern . It assumes a therapeutic relationship. Substance abuse education alone

### XXIII.Conclusion

Earlier onset of substance use in adolescents predicts greater addiction severity and morbidity.

Learning may be adversely affected by drug use during adolescence, particularly when use is frequent and heavy. Illicit drug use can affect relationships with family and friends by causing adolescents to be unreliable, forgetful, dishonest, or violent; it can also put them at increased risk for being a victim of violence. The intervention in substance using adolescents requires involvement of parents as well as teachers. The family needs to be counselled about nature of treatment and the process of recovery.

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