

The effects of media use on substance abuse among U.S. adolescents

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Abstract. This paper mainly explores the current situation and the effects of substance abuse among U.S. adolescents, with a focus on the effects of media use on substance abuse in the youth, which has drawn material attention in recent years considering the healthy development of adolescents. The United States' high substance consumption rates and increasing overdose deaths among these young individuals in their early life stages highlight the urgency of addressing this question. By synthesizing a list of related reviews published in recent years, this paper clarifies the acute condition of substance use among U.S. adolescents and gives a brief introduction of its impacts as well as the medical treatments or interventions in practice. Furthermore, this paper finds both positive and negative roles of media in the act of abusing in this certain age group by reviewing previous studies. This paper can provide a comprehensive and neutral perspective on this issue to all.

Keywords: Substance Abuse, Media, U.S. Adolescents.

1. Introduction

Substance abuse refers to the persistent use of alcohol, tobacco, illegal drugs, or the improper use of over-the-counter or prescription medications. The issue of substance abuse among U.S. adolescents has reached alarming proportions. With the United States being the world's largest consumer of drugs, studies have revealed a recent, striking increase in overdose mortality among adolescents aged 14 to 18 [1]. It is evident that urgent action is required to address this crisis.

All individuals now use media (defined as any form of communication that is intended to reach a large audience, such as a book, television, or mobile device) on a daily basis, but adolescents use it more frequently. They are exposed to media, especially electronic devices, for a significant amount of time every day, and this exposure can have both positive and negative effects. Previous researches have proved the undesirable influence of media on substance abuse among U.S. adolescents, including increasing the chance of alcohol use disorder or drug addiction. Recent studies by Mahalaqua et al. locate a systematic review thoroughly investigating the relationship between or influence of electronic media on substance abuse among adolescents, which showed a surprising adverse effect [2]. The aim of the paper is to synthesize recent published reviews on substance abuse among U.S. adolescents as well as the effects of exposure to media on substance abuse among this group. Thus providing a comprehensive paper on related topics to future researchers, calling for instant actions to protect U.S. adolescents from the substance epidemic and to deal with the problems.

2. The prevalence of substance abuse among U.S. adolescents

2.1. Current state and previous research

The serious situation of substance abuse. Substance abuse is a pervasive problem among U.S. adolescents now.

Alcohol – as the most consumed substance – is favored by U.S. adolescents. 31.3% of 10th graders and 51.9% of 12th graders reported alcohol use in 2022, the latter showed a sharp increase compared to the year 2021 and revealed a horrible reality that potentially more than half of the U.S. adolescents started drinking alcoholic beverage before the nation's legal drinking age [3].

47% of young people have started using illicit drugs by the time they graduate from high school, and it is causing an inconvenient truth that between January and June 2021, about 1,150 teens ages 14 to 18 died from drug overdoses, which showed a 20% increase over 2020 and more than double the number of deaths in 2019 [1]; it is worth noting that illicit fentanyl (a synthetic opioid that is often prescribed to ease the pain) and other synthetic opioids made great contributions to the number of overdose deaths, which reached a record high, in the U.S. in the 12 months ending in October 2021, this grievous situation did ring the alarm clock to parents, educationalists, medical practitioners and the local government [4]. As the alternative choice of tobacco, nicotine vaping attracts the attention of most pubertal teenagers. About one-fifth of 10th graders and almost one-third of 12th graders reported vaping nicotine in 2022 [3]. Fortunately, the number remained stable comparing to 2021 during the COVID-19 pandemic.

Interventions & consequences. It is wise to actively seek for help or regular interventions toward health sectors, in particular, hospitals, when people find themselves struggling with substance abuse.

For adolescents who are having problems with alcohol consuming, medical treatments, including medicines and behavioral therapies, are offered to help them quit drinking. There are three typical non-addictive medicines provided: disulfiram, naltrexone and acamprosate. Certificated health providers may help adolescents with the right medication. Behavioral therapies refer to working with a professional to figure out the reasons for heavy drinking. Cognitive-behavioral therapy (CBT) makes it easier to recognize the emotions and circumstances that can trigger binge drinking. The use of motivational enhancement therapy helps develop and reinforce the desire to stop drinking. It lasts for a short time and consists of roughly four sessions. Spouses and other family members are included in marital and family counseling. It can assist in mending and enhancing familial ties. According to studies, a healthy family environment and family therapy may encourage adolescents to abstain from drinking. Short, one-on-one or small-group therapy sessions are known as brief interventions. One to four sessions are included. Patients receive information from the counselor regarding their drinking habits and any risks. After that, they assist the patient in setting goals and offering suggestions that could facilitate transformation.

To wean themselves off the drugs, adolescents may go through two processes: counseling and medication. The counseling may be individual, family, and group therapy. It can help the addict understand addiction, and see how drugs change behaviors, and learn how to deal with their problems so they won't go back to using drugs, and also learn to avoid places, people, and situations where they might be tempted to use drugs. Medicines can help with the symptoms of withdrawal. For addiction to certain drugs, there are also medicines that can help addicts re-establish normal brain function and decrease cravings.

2.2. The influence of substance abuse among U.S. adolescents

Alcohol. It is well known that the brain develops fast during adolescence and continues to do so until early adulthood. By compromising motor and cognitive abilities like balance and hand-eye coordination as well as cognitive abilities like impulse control and decision-making, excessive alcohol consumption raises the risk of accidents and other negative impacts. Different brain regions grow along distinct, time-varying paths. In the frontal regions of the brain connected to higher-order cognitive functioning that emerge later in adolescence and young adulthood, alcohol consumption has had a negative impact on a variety of emotional, mental, and social functions [5].

Tobacco/nicotine vaping. Early teenage cigarette use is more likely to result in nicotine dependence and adult cigarette use. Traumatic stress disorder, anxiety, and mood disorders have all been linked to teen smoking. Numerous adolescent issues, such as sexual risk behaviors, aggression, and the use of alcohol and illicit drugs, have been linked to nicotine use. Adolescent smokers have been found to exhibit high levels of impulsivity.

Additionally, smoking is linked to a higher prevalence of anxiety and mood disorders in adolescents as compared to non-smokers. Smoking has a favorable correlation with suicidal ideas and attempts. For current and former smokers, peer pressure, trying something new, and stress management scored the highest. Smoking might varyingly affect individuals' states of mind. Youngsters who smoke appear to be more wild, less ready to control their driving forces, and less mindful than non-smokers [5].

Prescription medicines & over-the-counter medicines. Fentanyl, a kind of prescription medication used to treat pain, can cause someone to feel extremely excited when the drug is used in a different way or with a wrong dose. It can also lead to somnolence, queasiness, puking, and urinary retention. Fentanyl is highly addictive, the users experience severe withdrawal symptoms during the detox process. It is also of high lethality among all kinds of drugs.

Illegal drugs. Common illegal substances include cocaine, marijuana and heroin.

Cocaine is a highly addictive substance that results in a number of psychiatric disorders, conditions, and symptoms. Agitation, paranoia, hallucinations, delusions, violence, and thoughts of suicide and murder are a few signs. The symptoms could be brought on by the substance directly or indirectly by making co-occurring psychiatric problems worse. The use of cocaine in "crack" form is typically associated with more frequent and severe effects. This has the ability to exacerbate many mental illnesses and produce a variety of psychiatric symptoms [5].

Problems along with learning, working memory, and attention have all been linked to the use of marijuana. Small quantities of cannabis have been demonstrated to reduce stress, but larger doses can result in anxiety, emotional symptoms, and dependence. Two maturational brain processes that take place in adolescence and the early years of adulthood are myelination and synaptic pruning.

These remodeling mechanisms are reportedly related to effective neuronal processing. For the best neurocognitive performance, it is assumed that they offer the specific cognitive processing required.

Before the age of 16, consumption of marijuana was connected to a decreased reaction time on a test of sustained attention. The endocannabinoid system is altered by cannabis usage, which has an effect on executive function, reward function, and affective processes. These abnormalities are thought to be what trigger mental health issues [5].

Heroin has a significant potential for addiction, and its physiological dependence, tolerance, and withdrawal symptoms develop quickly. In those who are opioid-naïve, sustained exposure to heroin can trigger the neuroadaptation process that leads to physiological dependence and withdrawal in as little as 4 – 8 weeks, and in those who have previously been dependent on it, reinstatement after relapse can speed up this process even more [6].

3. The interrelationship between media use and substance abuse

3.1. Positive effects

The use of media is conducive to preventing and reducing the issue of substance abuse among adolescents, in some cases it even plays an important role in supporting addicts to quit the problematic use of certain types of substances [2].

Cameron et al. and de Josselin de Jong et al. evaluated the impact of computer-based intervention on tobacco and alcohol consumption initiation [7-8]. According to research by de Josselin de Jong et al., Dutch students who participated in the computer-tailored "smoke alert" program reported less smoking initiation at the 6-month mark ($P < 0.001$), indicating that this program may be useful in preventing adolescent smoking initiation. Despite the fact that the subjects were not U.S. adolescents, we may draw some analogies and forecast that a similar occurrence will happen among this age group in the United States. In accordance with a similar study by Cameron et al., a theory-based online health behavior

intervention given to nonsmokers at the beginning of their college education prevented these individuals from starting to smoke and had considerable effects on their smoking status at a 6-month follow-up [7-8].

As demonstrated by a wide range of studies, sending peer counseling text messages to teenagers' peer groups can help them quit smoking by making little changes in their peer groups [2]. For instance, Mason et al. found that reducing time spent with smokers through motivational interviewing-based peer network counseling texts may reduce social stress, which in turn decreases craving and ultimately decreases smoking [9]. There are other studies that examined the impact of text message-based motivational treatments on adolescent alcohol misuse. Arnaud et al. found that short-term motivational interventions can be successful in lowering alcohol consumption in terms of frequency of drinking, frequency of binge drinking, and typical drink amounts [10]. Along with that, research by Schwinn and Schinke emphasized the promise of computer-based approaches to alcohol prevention. The team assessed examined long-term data collected through a computer-based substance abuse prevention program for U.S. adolescents. With a mean age of 10.8 years and 513 youths recruited from community organizations serving underprivileged areas of New York City, participants were randomly allocated to one of three research arms. When compared to youths in the control arm, those in the treatment arm reported lower rates of drinking ($P<0.01$), lower rates of heavy drinking ($P<0.01$), lower rates of cigarette smoking ($P<0.05$), and fewer instances of harmful alcohol-related outcomes. Despite having similar numbers of peers who were drinking, it was discovered that adolescents in the intervention groups had stronger alcohol-refusal abilities [11].

There are studies that provide encouraging evidence for the benefits of adding a Web-based appendage to a face-to-face group smoking cessation program as well [2].

3.2. *Negative effects*

Social media is frequently used for the promotion of alcohol-related or tobacco-related goods. Television advertising, as an unavoidable element of social media, has an impact on adolescents' opinions of and desire to use exotic substances [12]. According to the study by Duke et al., adolescents who had never used e-cigarettes before perceived them as a hipper, healthier, and more pleasurable alternative after watching four e-cigarette advertising ($P<0.001$) [13]. Many alcohol brands mount the social media, which gives them the chance to interact with adolescents and foster brand loyalty.

Marijuana's online popularity is certain to grow as more states and jurisdictions legalize it. While social media advertisements for marijuana are now prohibited, marijuana businesses can set up "business pages" to provide material and interact with users, and these business sites are available to all social media users including adolescents [12]. One study focused on Twitter, an online social messaging platform that is becoming more and more well-liked among young people, to look at the prominence of marijuana-related communications in social media [14]. The majority of the tweets, expressed positive opinions about the subject, and 59% of those tweets were reportedly posted by young people under the age of 20, which shows a relatively large proportion of adolescent participation.

Online communication not only encouraged the growth of illegal drug use. Mason et al. found that smoking may relapse due to the societal stress associated with spending time with smokers among adolescents [9].

4. Conclusion

This paper mainly explores the serious situation of substance abuse among U.S. adolescents and the role of media use in this issue. It is clear that U.S. adolescents are facing serious situations of substance abuse. The horrendous popularity of alcohol, nicotine vaping, as well as all kinds of drugs including prescription medication and illegal drugs, are steadily eroding young people from all aspects, physically and mentally. By understanding the underlying facts of substance abuse, as well as the role of media, parents, educators, health providers, policymakers and youth themselves may develop effective strategies to protect U.S. adolescents from succumbing to the substance epidemic.

Subject to the limited means of information retrieval, a part of the passages reviewed in this article are not recently published. Therefore, the study results may not be as immediate and in line with the current situation. To better depict the real phenomenon, the latest published and unpublished research are needed to investigate this topic.

Additionally, due to the over-advertisement of health products and anxiety of illness, the blind use or misuse of non-addicted substances is cutting its figure, which provides a future direction for the following research.

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