

## BRIEF REPORT

# SUBSTANCE-INDUCED PSYCHOSIS IN THE GERIATRIC POPULATION: OVERVIEW ON SCREENING AND TREATMENT

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## KEYWORDS:

Geriatrics

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Substance Abuse

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## ABSTRACT:

As our elderly population represents an increasing percentage of the overall population, more healthcare resources are spent treating this population. One of the overlooked issues is substance use in this population and its complications. This population is often not forthcoming with psychoactive medical issues, yet many of them came into adulthood in a time when substance use was widespread. This article will discuss the epidemiology of this population, a case of substance-induced persecutory delusion and the availability of screening methods and treatment options.

## INTRODUCTION

According to the DSM-V, substance use disorder is a cluster of cognitive, behavioral and physiological symptoms demonstrating that a person continues to use that substance despite several substance-related problems.<sup>1</sup> The abrupt discontinuation of drug use can lead to both affective (e.g., dysphoria, anxiety, anhedonia) and somatic withdrawal signs likely from an interplay involving neurotransmitters, such as dopamine and glutamate, as well as endogenous opioids like dynorphin.<sup>2,3,4</sup> In previous generations, older adults have not demonstrated a strong prevalence for alcohol abuse or illicit substance use compared to younger adults.<sup>5</sup> However, there is a growing concern that “baby boomers,” defined as individuals born between 1946 to 1964, will change this trend.<sup>6</sup> The baby boomer population is distinct in that they reached adulthood in the 1960s and 1970s, a time in American history when substance use was becoming more socially acceptable.<sup>7</sup> In 1979, approximately 27% of baby boomers—almost 14 million people—reported using some form of illicit substance in the past month.<sup>7</sup> According to the 2019 U.S. Census Bureau, current baby boomers, aged 56–76, comprise approximately 23% of the current population.<sup>8</sup> Given the existing size of this generation, as well as longer life expectancies, it is estimated that the number of older adults will increase from 40.3 million to 72.1 million between 2010 and 2030.<sup>5</sup> Data from the Treatment Episode Data Set-Admission (TEDS-A) demonstrated a trend of increasing substance use in the elderly population in facilities using public funding.<sup>9,10</sup> Based

on information gathered from the 2002–06 National Survey on Drug Use and Health (NSDUH), it was projected that the number of individuals 50 or older with diagnosed substance use disorder would increase from 2.8 million to 5.7 million by the end of 2020.<sup>6</sup> This growing number is concerning, as the global number of deaths related to drug use is also rising.<sup>11</sup> The number of deaths related to drug use increased by 60% between 2000–15.<sup>11</sup> Of the deaths caused by drug use in 2015, 39% were related to people aged 50 or older.<sup>11</sup>

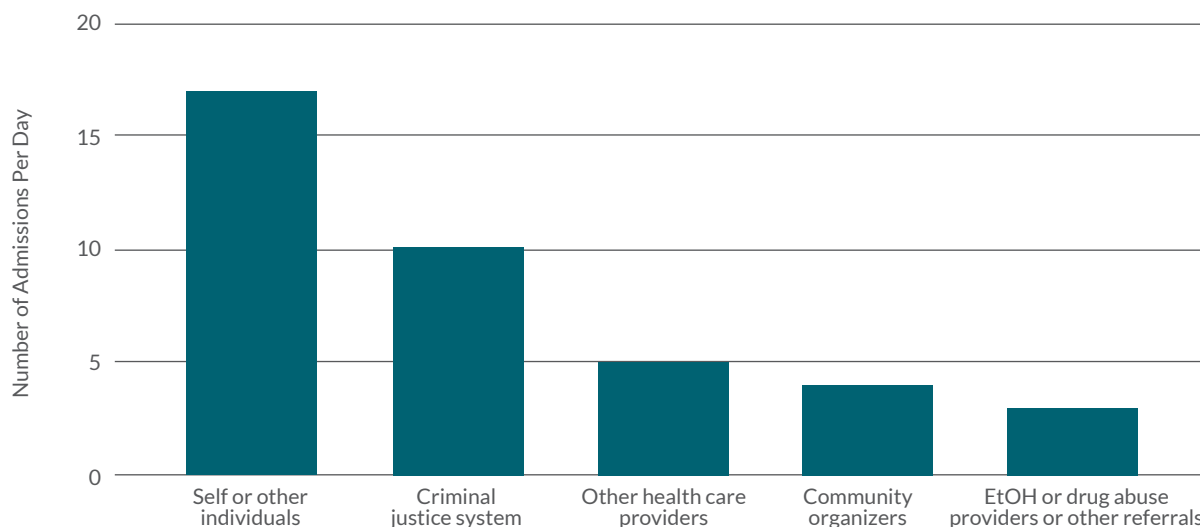
The Substance Abuse and Mental Health Services Administration (SAMHSA) data showed that most admissions aged 65 or older were initiated by patients self-reporting adverse events or involuntarily by the criminal justice system (Figure 1).<sup>12</sup> It is speculated that the difficulties in identifying geriatric patients with substance use stems from various reasons. One is low suspicion among healthcare professionals because providers may be confusing substance use effects with other age-related changes and comorbidities.<sup>6</sup> Another reason is the stigma and shame surrounding substance use led to low reporting.<sup>6</sup> Lastly, there is generally low awareness of this social problem in the community.<sup>11</sup> Increased awareness and outpatient screening protocols may increase the detection of elderly patients with substance abuse. Early detection can lead to the initiation of appropriate referrals in the primary care setting, avoiding hospitalization. This may entail more diagnostic work-up, but it may decrease admissions and complications, lowering overall healthcare costs.

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**FIGURE 1:**

Number of admissions aged > 65 admitted to substance abuse treatment on an average day (SAMHSA, 2012)



This data reported from the Substance Abuse and Mental Health Services Administration in 2012 reflects how many admissions on an average day were related to substance abuse in the geriatric population. These admissions occurred in various ways, typically through self-reporting, but also through the use of the criminal justice system, other healthcare providers, and more.

### Illustrative Case

A 61-year-old Caucasian male was admitted to the psychiatric unit with persecutory delusions and hallucinations. The week before admission, he started to see “men outside his windows at both stories of his house” holding pictures of a bird with its tongue pulled out and cut. The patient saw the men come into his house, so he ran and hid in an empty shed. He fired his guns out of the shed and nearly hit a real man from across the street. Police arrested the patient for attempted homicide and possession of illicit substances. He was taken to a community mental health clinic and then sent to the emergency room for further medical evaluation. The evaluation included a complete blood count (CBC), comprehensive metabolic panel (CMP) and neuroimaging. These were unremarkable, and he was admitted to the psychiatric unit. A urine drug screen was not ordered at either of the initial facilities; however, it was ordered in the psychiatric unit and was positive for amphetamine, methamphetamine and marijuana. After admission to the psychiatric unit, the patient admitted to using marijuana, cocaine and methamphetamines 10 days before admission. His wife reported seeing the patient use some unknown substances. The patient did not report past psychiatric history, but he admitted to using marijuana as a teenager. The patient reported sobriety most of their adult life until a DUI 5–6 years ago. The patient has a brother with methamphetamine use disorder. No hallucinations during the inpatient stay were witnessed or reported. His persecutory delusion cleared on day two of admission, and he was discharged with outpatient follow-up with the community mental health clinic on hospital day three.

### Discussion

This case demonstrates the dire consequences possible with cases of undiagnosed substance use disorder in the geriatric population.

The patient has a well-known history of substance use in his youth; however, due to the low suspicion of healthcare professionals and his ability to fulfill his social and family obligations, per his wife’s collateral information, his substance use had gone undiscovered for years. Even in the emergency room, a CT of the head was done as part of the initial assessment for his psychosis; however, a urine drug screen was not done. Based on his age at presentation, drug use was not likely considered in the differential.

Screening should be utilized when the elderly visit their primary care office, such as it is under the Florida Brief Intervention and Treatment for Elders (BRITE).<sup>13</sup> BRITE is a state program for elderly individuals with substance use disorders to screen, intervene, treat and refer patients to various services.<sup>13</sup> Awareness needs to be increased in healthcare workers and facilities with the most contact with the elderly. This includes pharmacies, senior centers, home health services, visiting nurses, social workers and assisted living communities. Greater awareness of geriatric substance use may promote early detection, intervention and prevention, decreasing hospital hospitalizations. In addition, if admission is required, it will be from healthcare providers and community organizations, instead of the criminal justice system.

In addition to BRITE, there are other screening programs and tools, such as Screening, Brief Intervention and Referral to Treatment (SBIRT). This is an evidence-based practice that emphasizes universal screening in healthcare settings, followed by focused interventions for those with substance use disorders and those at risk for developing an addiction.<sup>14</sup> When compared to BRITE, it was demonstrated that SBIRT could be extended as a non-medical service for older adults dealing with substance use.<sup>13,14</sup> Tobacco, alcohol, prescription medication and other substance use (TAPS) is a two-component, new screening tool that has been developed by the National Institute on Drug Abuse (NIDA).<sup>15-18</sup>

The first component (TAPS-1) is a four-item screen for tobacco, alcohol, illicit drugs and prescription drugs' nonmedical use. If an individual screens positive on TAPS-1 (e.g., gives a response other than "never"), the tool proceeds to the second component (TAPS-2), which consists of brief substance-specific assessment questions through which the patient is assigned a risk level for that substance.<sup>15</sup> Risk levels range in severity from "problem use" to the more severe "substance use disorder."<sup>15</sup> The U.S. Preventive Services Task Force (USPSTF) published a final recommendation regarding unhealthy drug use in adults age 18 years or older. The USPSTF concludes that there is a moderate net benefit (Grade B) to unhealthy drug use screening in adults age 18 years or older when effective treatment and appropriate care can be offered or referred.<sup>19</sup>

Regarding treatment, there are various pharmacologic and psychosocial therapies, as seen in Figure 2. Many pharmacological therapies that combat substance use lack the research to consistently determine efficacy in the geriatric population. Disulfiram, an agent that can reduce cravings for alcohol, has been shown to have a cardiotoxicity risk for the elderly.<sup>20</sup> Varenicline, a nicotinic agonist that has been used for smoking cessation, has also been shown to reduce alcohol use.<sup>5</sup> Acamprosate with an unspecified mechanism of action that appeared to decrease glutamate action and to increase GABA action helps with alcohol abstinence maintenance.<sup>21</sup> Nalmefene, a mu and delta-opioid receptor antagonist and kappa-opioid receptor partial agonist, assists in reducing alcohol consumption by reducing the effects of alcohol experienced by the consumer.<sup>21</sup> Bupropion S.R., a selective norepinephrine dopamine reuptake inhibitor, shows efficacy in smoking cessation as well.<sup>21,22</sup> Then, there is also nicotine replacement therapy (NRT) through patch, gum or lozenges.<sup>23</sup> For opioid use disorder, there are several FDA-approved medications like methadone, buprenorphine and naltrexone.<sup>22,24</sup> Naltrexone not only helps with opioid dependence but also with alcohol dependence.<sup>21</sup> Finally, there is ongoing research regarding immunotherapy for substance use disorder. Anti-drug vaccines, anti-drug monoclonal antibodies and anti-drug monoclonal antibodies derivatives are currently being developed for methamphetamine, cocaine and heroin.<sup>25</sup>

There are also various forms of psychotherapy researched for substance use disorders. Cognitive behavioral therapy (CBT) helps with relapse-prevention skills coping skills, and adaptive behaviors.<sup>20,26-27</sup> CBT has demonstrated superiority for cannabis use and nicotine use disorders when compared to other psychosocial intervention. Mindfulness-oriented recovery enhancement (MORE) has demonstrated the benefit in decreasing the desire for opioid use and statistically significant reductions in patient's pain severity and pain interference.<sup>28-30</sup> Contingency management is an adjunct to CBT, helping with treatment retention.<sup>16,23,31-34</sup> Motivational interviewing (MI) and motivational enhancement therapy help address the underlying ambivalence toward change and gain commitment to make and maintain healthy behaviors.<sup>23</sup> In limited case studies, CBT and MI have been seen as effective tools for coping with prescription sedative abuse.<sup>35</sup> Recorded music expressive arts (RMEA), a form of music therapy, has shown some benefits in adolescence dealing with inhalant abuse and may provide an adjunctive tool in the elderly population.<sup>36</sup> Family

therapy helps with relationships and the interaction between family members.<sup>20</sup> Brief interventions designed to counsel the patient when the substance use is not considered serious and community reinforcement and family training (CRAFT) have been recommended for hallucinogen use, such as lysergic acid diethylamide (LSD).<sup>37</sup> The most reviewed psychotherapy is the 12-Step Program.<sup>20</sup> In addition, there is a matrix model that combines CBT, MI, family participation and the 12-Step Program.<sup>20</sup>

FIGURE 2:

Treatments for various substance use disorders <sup>5,20,22-37</sup>

SUBSTANCE	PSYCHOSOCIAL TREATMENTS	PHARMACOLOGIC TREATMENTS
Alcohol	Motivational enhancement therapy (MET), cognitive behavioral therapy (CBT), abstinence-based contingency management (CM)	Disulfiram Varenicline Acamprosate Naltrexone Nalmefene
Cannabis	Motivational enhancement therapy (MET), cognitive behavioral therapy (CBT), abstinence-based contingency management (CM)	~
Hallucinogens	Brief interventions, community reinforcement and family training (CRAFT)	~
Inhalants	Recorded music expressive arts (RMEA)	~
Opioids	Cognitive behavioral therapy (CBT), mindfulness-oriented recovery enhancement (MORE)	Methadone Buprenorphine Naltrexone Immunotherapy (future)
Sedatives/hypnotics, anxiolytics	Motivational enhancement therapy (MET), cognitive behavioral therapy (CBT)	~
Stimulants	Cognitive behavioral therapy (CBT), abstinence-based contingency management (CM)	Immunotherapy (future)
Tobacco	Cognitive behavioral therapy (CBT)	Varenicline Bupropion S.R. Nicotine replacement therapy (NRT)

## CONCLUSION

Substance abuse in the elderly is a developing concern that will continue to grow as the population ages while the suspicion of drug use in this population is low. With the current awareness and guidelines that providers follow today, substance abuse may continue to go unnoticed, causing a significant financial burden to the annual cost of health care and, most importantly, unnecessary complications to the patient and stress to the family. Screening metrics, such as BRITE, SBRITE and TAPS, can provide cost-effective tools to screen for in this population. Given the limited data on pharmacological intervention in the geriatric population, different psychotherapies may provide an effective first-line treatment.

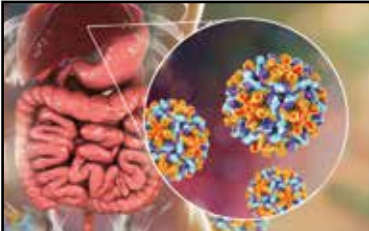
## AUTHOR DISCLOSURES

No relevant financial affiliations or conflicts of interest. If the authors used any personal details or images of patients or research subjects, written permission or consent from the patient has been obtained. This work was not supported by any outside funding.

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