

Review

Aging High: Opioid Use Disorder in the Elderly Population

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Abstract

As the 80 million “baby boomers” reach retirement, they bring their relaxed attitudes toward drug use to create a clinically significant population of geriatric drug abusers. Opioid use disorder (OUD) brings with it special considerations in the elderly population: age-related changes to drug disposition, brain changes in the elderly, polypharmacy, and the likelihood of comorbid conditions (such as cardiovascular or pulmonary diseases) and pain syndromes. Thirteen percent of patients in a New York city methadone clinic were over the age of 60 and clinicians increasingly treat geriatric patients with OUD or other substance use disorders. Opioid abuse patterns suggest that older patients are more likely to overdose on prescription drugs while younger individuals are more likely to overdose on street drugs (heroin). Diagnosing OUD may be challenging in the geriatric population and there has been little research into age-specific rehabilitation efforts although it is reasonable to assume increasing numbers of aging people will seek treatment for OUD in the future. Once in treatment, outcomes for older patients with OUD are as good as or superior to those of younger patients.

Keywords

Opioids; opioid use disorder; aging addicts; opioid use disorder in geriatric patients



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1. Introduction

Opioid use disorder (OUD) is emerging as an important problem among geriatric patients. While iatrogenic OUD in seniors has been investigated, far less is understood about recreational opioid users who reach retirement with an active disorder. OUD is more common in younger people and this gives rise to the mistaken impression that geriatric patients may not have OUD borne of recreational use. A recent study in New York City of patients at a methadone maintenance clinic found that 13% of its patient population were over 60 years of age [1]. Many elderly people who started taking opioids recreationally and reach old age view their OUD as manageable and themselves as functional. This emerging population poses challenges to the healthcare system and has not been well studied.

There is a need to recognize and care for geriatric patients with active and non-iatrogenic OUD. The population of seniors who use opioids nonmedically is expected to double from 1.2% in 2004 to 2.4% in 2020 [2]. While the use of illicit drugs for psychoactive effects tends to decrease as individuals reach middle and old age, it is estimated that in 2014, in the United States about one million older adults (defined as those ≥ 65 years) had some form of substance use disorder, including but not limited to OUD [3]. Substance use disorder appears to be higher in baby boomers (individuals born between 1946 and 1964) versus earlier generations [4].

The 80 million baby boomers who came of age in the 1960s and 1970s have vastly different and more tolerant attitudes toward prescription and illicit drugs than their parents. They grew up viewing many physical ailments as pharmacologically manageable and were not particularly troubled by the use of drugs for psychoactive or recreational benefits. The aim of our paper is to better define and describe geriatric individuals with non-iatrogenic OUD as a specific patient population, to determine key factors that may influence this population, and to suggest possible ways to deal with the population as they interface with the healthcare system. To this end, we included a short interview with a 64-year-old man in long-term care with a decades-long history of active OUD. There is a paucity of literature on this subject and it is our aim to help give contours to this amorphous but emerging patient population and the issues it creates for patients, their loved ones, the clinicians who care for them, and the healthcare system.

2. Methods

The authors searched PubMed on September 25, 2018 for “opioid+use+disorder” and geriatric) and got 2 results. We then searched “opioid+use+disorder and elderly” which yielded 219 results. The third search was for “opioid+use+disorder old” which produced 20 results. The search results seemed somewhat perplexing as the terms “geriatric,” “elderly,” and “old” seem to use to be synonymous but resulted in somewhat different search results. In all cases we limited findings to clinical trials, meta-analyses, and systematic reviews and we limited the time range to publication with the last 10 years. Only publications in English were included. The authors then eliminated articles that were off-topic, irrelevant, or duplicate. We also used the bibliographies of relevant articles to find supplemental sources. This is a narrative rather than systemic review.

We also interviewed a geriatric drug addict known to the authors and included some of his comments in a section in the article which highlight some of the points made in the literature. This was not a series of interviews but rather a single lengthy interview with a person known to us.

3. Age and Changing Attitudes about Drugs

America has cyclical shifts in attitudes about drugs. In the 19th century, many alcohol and drugs, such as morphine and opium, were considered helpful and appropriate for broad consumption; even children might be administered heroin for coughs, cocaine for teething pain, or alcohol as a sleep aid. This attitude changed abruptly in the 1900s up to about 1940 when drugs were considered dangerous and potentially addictive substances whose few appropriate uses (if any) were to be tightly controlled. This changed again in the 1960s and 1970s when drugs in America were embraced for recreational use and heralded, in some cases, for their role in personal or spiritual growth [5]. Thus, the geriatric population of the United States grew up in a time when drugs were enthusiastically accepted if not totally legal. Celebrities from the 1960s to today frequently have unashamed histories of drug use, including actors (Robert Downey, Jr., Charlie Sheen), musicians (from Hank Williams to Elvis Presley to Prince to Jimi Hendrix), commentators (Rush Limbaugh), and other celebrities. John Lennon was addicted to heroin. Keith Richards of the Rolling Stones once famously said that he never had a problem with drugs, but rather had problems with the police.

Although marijuana had been introduced to the United States early in the 20th century, it did not become popular until around 1960, catalyzed in part by the hippie movement. The Woodstock Festival in August of 1969 saw widespread, open use of marijuana and a relatively peaceful assembly of about 200,000 people over three days of off-and-on rainy weather. This fueled the perception of marijuana as a benign substance that encouraged peaceful behaviors and bolstered a popular view that drug use could be a viable recreational activity. In the 1960s, comedian Lenny Bruce said, "Marijuana will be legal someday, because the many law students who now smoke pot will one day be Congressmen and they will legalize it to protect themselves [6]."

Opioids were a different story. Legal up until the turn of the 20th century, public perception of opioids (opium) changed radically with the Harrison Narcotic Control Act of 1914. This law regulated the use of opioids, at a time in America when pain was treated as an emotional or physical aberration to be managed with moral fortitude and rugged determination rather than drugs [7]. By 1988, the reluctance to use opioids even to manage severe pain at end-of-life in cancer patients resulted in the publication of the Cancer Pain Monograph by the World Health Organization, advocating the use of opioids, such as oral morphine, to manage cancer pain [8]. The pendulum soon swung the other way. By 1995, the American Pain Society had declared pain to be "the fifth vital sign" and soon thereafter, international organizations championed the control of noncancer as well as cancer pain as a fundamental human right [9]. Reluctance to use opioids was deemed "opiophobia" as pain treatment emerged a crucial part of medical care. Opioids were championed as a boon to the many suffering acute, chronic, or cancer pain. Baby boomers experienced the aches and pains of middle age in an era of prescription opioid acceptance.

At the same time, opioids were well known for their psychoactive and euphoric effects. Despite the known dangers of opioid use, for example, in the famous "27 Club" or celebrities who died of opioid or other drug use at the age of 27 (Janis Joplin, Jimi Hendrix, Jim Morrison, and Kurt Cobain),

opioid use gained a certain degree of acceptability, even glamour. The so-called “heroin chic” trend of the early 1990s features pallid, languid, emaciated models with torn clothing and dark shadows under their eyes. While opioid abuse transcends barriers—they are used recreationally by preteens in housing projects and red-carpet celebrities in Hollywood; by people residing in rural and urban communities; by country music stars and rappers; by hyper-productive types and the unemployed—baby boomers have observed if not totally approved of their recreational use. Many people growing up in the 1960s and 1970s were exposed to opioids, experimented with them, and continued using them over the course of a lifetime.

4. Marijuana and Opioids

The use of marijuana in the elderly population may be relevant to an exploration of non-iatrogenic OUD. By and large, baby boomers grew up in a society relatively tolerant of the recreational use of marijuana. In a cross-sectional analysis of responses to 2015-2016 surveys from the National Survey on Drug Use and Health (NSDUH), the prevalence of past-year marijuana use was 9.0% among adults between the ages of 50 and 64 and 2.9% among adults ≥ 65 years [10]. In this survey, marijuana use can be associated with past-year alcohol use disorder, nicotine dependence, cocaine use, and the misuse of prescription medications (among them opioids, sedatives, and tranquilizers) [10]. Thus, marijuana use is prevalent in the rapidly growing elderly population and may be associated with the risk of other drugs. These older marijuana users are likely to perceive a lower risk for marijuana use than younger users. Using bivariate logistic regression among never-users, former users, and past-year users over the age of 50, the NSDUH survey (n=24,057) found former and past-year marijuana users had significantly lower odds of perceiving marijuana to pose a moderate to great risk compared than never-users (adjusted odds ratio [AOR] 0.30, 95% confidence interval [CI], 0.27 to 0.32 for former users and AOR 0.05, 95% CI, 0.04 to 0.06 for past-year users). Those who used marijuana within the past year were less likely to perceive it as having moderate/great risk than other groups. College education, higher income, and residing in a state with access to medical marijuana were also associated with a lower perception of risk [11]. In a study based on data from the 2012-2013 National Epidemiologic Survey on Alcohol and Related Conditions (n=14,715 respondents over age 50), 3.9% had used marijuana in the past year and had a higher risk for other drug use (relative risk ratio [RRR] 2.73, 95% CI, 1.63 to 4.55). Furthermore, the number of joints smoked during peak use and frequency of marijuana use among those who had used marijuana in the past year was also significantly associated with greater odds for other drug use disorder as well as for lifetime risk of marijuana use disorder [12].

Older individuals who use marijuana recreationally are at elevated risk of abusing pain medications. In a study based on the 2012-2013 National Survey on Alcohol and Related Conditions (NESARC-III), it was found that 3.87% of respondents over the age of 50 (n=14,715) had used marijuana non-medically in the preceding year and that 14.40% of the marijuana users had used pain relievers non-medically, versus 2.67% of non-marijuana-users who used pain relievers non-medically [13]. Controlling for sociodemographic factors, pain levels, health status, mental health disorders, and the presence of other substance use disorders, marijuana use could be significantly associated with the misuse of pain relievers and, specifically opioids.¹¹ Thus, many in

the current generation of geriatric patients is likely to view recreational marijuana use as not particularly harmful.

5. Risk Factors for OUD among Older People

Risk factors for inappropriate use of opioids have been described in the literature in general terms. Patient factors may contribute to the non-medical use of opioids, OUD, opioid-related morbidity, toxicity, suicide, and mortality. These main risk factors may be summarized as: past or current substance use disorder, untreated psychiatric disorder, social environments or familial settings that encourage opioid misuse, and younger age [14]. However, opioid-overdose mortality is more prevalent in middle-aged than younger people; among older individuals, opioid overdose mortality is highest in those with current substance use disorders plus psychiatric comorbidities [14]. As might be expected, opioid overdose mortality is also higher among patients with cardiac or pulmonary conditions [14], conditions that are more prevalent among geriatric than younger patients. Among the strongest predictors for potentially life-threatening respiratory depression with opioid use are cerebrovascular disease, heart failure, renal disease, and non-malignant pancreatic disease, which are also more prevalent in older than younger individuals [14].

Elderly people encounter another risk in the form of age-related pain syndromes, such as osteoarthritis or low back pain, which make them more likely to be prescribed opioids than younger patients. Individuals who used opioids recreationally as young adults may have found it easy to get a prescription for opioid analgesics in middle age. In addition, older patients have had decades of life experience, which may include traumatic events that have been associated with an elevated risk for OUD. As individuals age, they may also face more loneliness, personal loss (death of spouse or friends), social isolation, deteriorating health and function, and financial problems [15]. All of these factors may contribute to a need to find escape in drug use.

6. Opioid Use Patterns among the Aged

Age presents some interesting differences in statistical distributions of opioid use. Among young people (ages 20 to 34 years), the opioid overdose deaths related to the use of heroin and synthetic opioids, including fentanyl, is 14.2 per 100,000, which is more than twice that observed in adults between the ages of 55 and 64 (6.3 per 100,000). However, prescription opioid overdose is the opposite with overdose deaths 35% higher among older individuals (55 to 64) compared to younger people (20 to 34). Hospitalizations for ingestion of prescription opioids are also more frequent among older than younger individuals (20 per 100,000 for those over the age of 55) [16]. This suggests that older patients are more likely to overdose on prescription opioids while younger people are more likely to die from opioid toxicity from street drugs.

Polysubstance abuse refers to the use of multiple agents, sometimes opportunistically, for their psychoactive effects and may include combinations of opioids, alcohol, cocaine, marijuana, psychiatric agents, "ecstasy," LSD, benzodiazepines, and other prescription and non-prescription drugs. Polysubstance abuse, associated with opioid misuse, is common in both older and younger people with OUD [17]. For example, people who use heroin are about four times as likely to take a prescription opioid non-medically compared to people who do not use heroin [17]. Both older and younger individuals with OUD also show a willingness to migrate to alternative drugs when specific opioids, even drugs of choice, become harder to obtain [18]. Polysubstance use is not necessarily a

fixed combination of certain psychoactive agents but rather describes a general willingness to take multiple such products concurrently.

The NSDUH found that the risk of prescription opioid dependence among those over age 50 was higher (7.6%) than the risk for all ages of the entire group (1.7%) [19]. Among non-institutionalized adults over the age of 50 who took prescription opioids in a non-medical way in the past year (about 1.4% of the total population of people over 50), the risk of OUD was greatest for those in the age bracket 60 to 64 years (1.9%), men (1.7%), Native Americans (9.0%), alcohol users (1.7%), those with past-year depression (2.9%), and those who used marijuana (10.7%). Of individuals of all ages who said they used opioids non-medically in the past year, 50% said they used them for 12 or more days [19]. Opioids, along with alcohol and cocaine, are the main substances of abuse among those over 50 years of age seeking treatment for substance use disorder [4].

There are many reasons for the growing population of aging individuals with OUD. The first is the general trend in developed nations that people today live longer, are fitter, and may survive for long periods with “managed disease” like diabetes or cancer. With longer life spans and general well-being, individuals with a history of drug abuse may see no need to abandon their opioid (or cocaine or marijuana) intake just because they reach a certain calendar age. As individuals age, they may see changes in their circumstances that facilitate drug use: families grow up, responsibilities diminish, disposable income grows, and many elderly people live alone. Despite longer lifespans, aging is also associated with psychological stressors, such as loss of loved ones, loneliness, increasing social isolation, health worries, fear of dying, “empty nest” syndrome, the adjustment to retirement, a growing sense of irrelevance, and other major life changes. Thus, while some elderly individuals continue using drugs as they age, there are older persons who may initiate or re-initiate drug use in old age in the face of these challenges [20]. Today’s geriatric patients, the baby boomers, came of age in a culture in which prescription medications were widely available and health problems were considered “fixable” with the right pharmaceutical treatment. In most developed nations, the geriatric population is burgeoning even as the younger population shrinks—this means that there are simply more and more older individuals in the healthcare system. More than any other generation in U.S. history, today’s geriatric population have grown up surrounded by recreational drug use, embraced images from a drug-endorsing celebrity culture, and have been exposed to the concept that drugs can improve mood and make one feel good in addition to solving medical problems. In short, many geriatric patients today have a very different attitude about the use and safety of drugs, including opioids, than the younger generation of physicians who treat them.

7. Diagnosis of OUD in Geriatric Patients

When OUD seems plausible, physicians should ask older patients about their use of prescription as well as recreational drugs. Despite the fact that baby boomers emerged from a culture that was highly accepting of drug use, older adults may not be forthcoming about OUD and physicians may be uncomfortable asking seniors about their opioid consumption [15]. Certain indicators of OUD may be masked by geriatric patients as the normal signs and symptoms of advancing age: sedation, memory loss, falls, confusion [21]. Furthermore, signs of OUD in younger patients, such as marked reduction in productive activity, may seem, in an older person, to be a normal consequence of

aging [20]. Screening tests for OUD in the geriatric population that have good specificity and sensitivity are needed [20]. Such tests exist for younger patients but may not be appropriate or capture information for seniors.

8. Specific Interventions for Geriatric People with OUD

With the understanding that elderly persons may have OUD, it may be helpful to formulate age-specific treatment and prevention initiatives because this older generation may differ from younger patients with OUD. In general, aging adults have higher healthcare utilization rates and are more likely to have painful medical conditions. Some older individuals may have started taking opioids (on or off prescription) in an effort to manage pain only to develop OUD. Some older individuals obtain opioids from friends or others mainly to manage pain. Older individuals may benefit from interventions led by healthcare providers and prescribers who can help them manage chronic pain and educate them about pain control tactics [16].

Other geriatric individuals with OUD may have a long history of opioid use and take the drugs compulsively for their psychoactive effects. Physicians who encounter such patients should encourage treatment of OUD rather than deciding that the patient is “too old” to benefit from rehabilitation. Treatment of OUD may take place in any number of settings based on the patient’s level of addiction, the patient’s preference and situation, availability, cost and financial factors, and the American Society of Addiction Medicine (ASAM) level of care. These levels of care, defined by the ASAM Criteria, are four levels of service and an early intervention level that exist across a continuum of care, making for five care levels that describe the intensity of recovery-oriented addiction healthcare services. The so-called ASAM CONTINUUM™ allows for a multidimensional patient assessment of individual needs, strengths, risks, skills, and resources. These services range from outpatient care to partial hospitalization for outpatients, residential and inpatient services, and medically managed intensive inpatient care with several intermediate steps as well [22]. To the best of the knowledge of the authors, there are no treatment strategies aimed specifically at older individuals nor is there specific research on which approaches are most effective in geriatric people with OUD. There is evidence that a large number of older adults will seek OUD treatment in the coming years [4, 23], yet there is little specific research into the aging population of OUD patients. Abstinence treatment may be recommended for certain individuals, but the abstinence approach has important drawbacks in that it is extreme, it is often ineffective, relapse is common, and patients who relapse are at special risk for overdose [24]. Indeed, relapsing patients are at elevated risk for overdose following detoxification, regardless of setting. Medication-assisted treatment (MAT) or opioid maintenance uses medications to control cravings and prevent relapse and is recommended as first-line treatment for moderate to severe cases of OUD.

Specific issues in the treatment of OUD in geriatric patients are emerging. The first important factor is that aging itself can alter how the body metabolizes drugs and increases the risk for many age-related health disorders such as cardiovascular disease. Age-related changes to the brain and cognitive disorders associated with aging may complicate treatment of older people with OUD. Second, older individuals may be appropriately indicated for opioids and may find them easier to obtain than younger, fitter individuals, meaning they may be able to more easily circumvent restrictions on their opioid access. Older individuals with long-term concomitant OUD and mental health disorders may be particularly challenging to treat in that conditions like depression or OUD

may become deeply entrenched over the decades [20]. Finally, older people are more likely to be taking multiple prescribed drugs, which substantially increases their risk of potential pharmacokinetic drug-drug interactions [25-28].

There have been recommendations made for age-specific treatment of OUD. It is thought that intervention strategies, if used at all with elders, should be nonconfrontational and supportive rather than relying on the more aggressive style typically used with younger patients [29]. Age-specific concerns (health issues, living situations, psychological considerations) may be appropriate to integrate into treatment plans. Seniors may have an advantage in rehabilitation in that older patients in OUD treatment may be less likely than younger patients to have close friends who encourage drug use [29]. In general, group counseling, individual counseling, cognitive-behavior therapy, and other outpatient approaches (such as community-based programs) may be effective for older persons with OUD. Counselors and those working with older OUD patients should be specifically trained for working with geriatric patients [4]. Once older patients enter OUD treatment, their short-term and long-term outcomes are as good as or superior to those of younger patients [29, 30].

MAT for OUD is not contraindicated in geriatric patients. MAT may rely on methadone or buprenorphine and evidence supports that MAT confers both a morbidity and mortality benefit on patients and may improve their quality of life [31, 32]. Some geriatric patients on MAT entered the treatment early, perhaps even when it first became available in 1972, and have remained on it since then, while other seniors entered MAT much later. The population of those on long-term MAT is not well studied [1].

9. Diversion and the Elderly

Opioid diversion may be defined as the purposeful and intentional removal of an opioid from the legal channels for dispensing and distribution for illegal purposes. Examples of opioid diversion include forged prescriptions, thefts from pharmacies, patients who sell their own prescription drugs to others, and people who steal or take prescription opioids from friends or family members [33]. Opioid diversion is primarily practiced by the age group between 35 and 44 years old and is less prevalent in the geriatric OUD population. Besides younger age, risk factors for opioid diversion include a family history of drug use disorder, a personal history of criminal behavior, divorce, and financial burdens [34].

10. Age-Related Issues

There are certain issues that may be unique in the aging OUD population which are briefly described below.

10.1 Pain and Aging

Pain is prevalent in the geriatric population. In a study of 2000 older adults (age 65 to 103 years), 38.5% reported chronic pain which occurred most frequently in the subpopulation of those over age 85 [35]. For this reason, elderly patients may be more likely to be prescribed pain relievers and they may also be more inclined to seek pain control, both of which can bring them

into contact with opioids. In addition, people with both OUD and pain may find it more difficult to discontinue opioids.

10.2 The Geriatric Brain

The human brain is a complex, dynamic organ that changes over the course of a lifetime and can be adversely impacted by OUD. Prolonged exposure to opioids can alter the brain's neurotransmission systems, changing the dopaminergic, serotonergic, and glutamatergic systems. However, the dopaminergic, serotonergic, and glutamatergic systems of the brain also change with age—independent of any exogenous opioids. For example, age-related decreases in dopamine receptor binding are similar to brain changes induced by long-term cocaine use. There is a paucity of research and information on how opioids affect the aging brain [20].

10.3 Age-Related Changes to Drug Disposition

Drug pharmacokinetics (absorption, distribution, metabolism, and elimination) change with age but in ways that remain to be fully elucidated. For example, the reduction in lean body mass that occurs with age decreases both the volume of drug distribution and the body's total water content, which impacts renal clearance of the drug. Slower drug metabolism allows drugs to accumulate faster in the system of geriatric patients. These well-known age-related changes can lead to elevated drug serum levels and recommendations for dose adjustment for geriatric patients [1].

On the other hand, pharmacodynamic changes, such as changes in receptor activity, may occur with age but heighten the patient's sensitivity to drugs such as is observed with the increased sensitivity to benzodiazepines in elderly patients. The homeostatic mechanisms that control steady-state levels in healthy younger patients may work less efficiently even in healthy older patients, who need more time to regain steady-state levels after drug therapy [20]. In fact, the progressive deterioration of homeostatic function has been described as one of the principle medical characteristics of aging [36]. Thus, in general, older people have stronger reactions to drugs along with more frequent and more intense side effects compared to younger people [36]. Certain centrally acting drugs such as psychotropic substances may impair muscle coordination and cognitive processing to a greater degree in the old than the young [36].

10.4 Comorbidities and Aging

Mental health disorders and substance use disorders are often comorbid conditions and this finding does not seem to vary with age [1]. However other comorbid conditions (heart disease, respiratory disorders, diabetes, cancer, osteoarthritis) do increase with age. A patient with respiratory disease who takes opioids may be at heightened risk for respiratory depression. Other comorbid conditions may necessitate taking pharmacological therapy, leading to polypharmacy and potential pharmacokinetic drug-drug interactions [25, 37, 38].

10.5 Age and Accidents

Drug use may increase the risk of accidents, falls, and other forms of injury that increase in prevalence among older individuals [39]. This area has not been thoroughly studied.

10.6 Advancing Age and MAT Compliance

MAT may be used in older individuals, but these drug rehabilitation programs are often subject to strict regulations including mandatory counseling appointments, regular clinic visits (even daily visits in some cases), toxicology screens, and other measures to assure treatment adherence and limit diversion. Older individuals may find it a hardship to meet these requirements as declining health, limited function, and cognitive deficits can limit their ability to meet these requirements. Travel to and from the clinic may be prohibitive for a geriatric patient with limited mobility, loss of driving privileges, and financial constraints. Medicare patients (≥ 65 years) may find themselves facing financial burdens and complexities as not all MAT programs are reimbursed by Medicare for OUD [1]. Many older patients on MAT who transition to Medicare face increased financial burdens in the form of higher out-of-pocket expenses.

Homebound or bed-bound individuals may not be able to participate in some MAT programs which require that drugs be administered only in the clinic by specially trained individuals. For example, it would be very difficult for a long-term care resident to be on chronic methadone maintenance therapy, although many long-term residential facilities will accommodate short-term methadone maintenance programs in selected cases [1]. In some instances, reimbursement may be complicated in that buprenorphine may be covered, but not methadone. For a geriatric patient currently on methadone maintenance, transitioning to a different type of MAT involves cross-tapering to rotate to the new agent. This is a theoretical possibility that is not always put into real-world practice and it may cause anxiety in the patient, rebound pain, withdrawal symptoms, and other adverse effects [1]. There is no clearly described medical advantage for rotating a methadone-maintained geriatric patient (who tolerates the drug well) to buprenorphine, but sometimes there may be a financial one.

In general, there is much that remains to be elucidated about older patients on MAT, if and when MAT should be tapered or discontinued, and if MAT rotation is a medically sound choice. As older patients have more pressing medical needs and may need other forms of pharmacological therapy, it is not clear at which point (if any) MAT should be tapered and ceased. The notion that a patient should be continued on MAT indefinitely or into very old age does not seem optimal, but there is little guidance in how to manage the aging patient on MAT [1].

10.7 Intentional Poisoning

Geriatric patients have high rates of hospitalization for opioid toxicity, partly due to the fact that they may be on polypharmacy and thus be susceptible to pharmacokinetic and pharmacodynamic drug-drug interactions or the fact that their aging metabolic systems make them more vulnerable to potential toxic effects of drugs. However, in a study by the Canadian Institute for Health Information, it was suggested that 14% of aged patients hospitalized for opioid toxicity were in reality patients who committed intentional acts of self-harm [40]. Depression is common condition among aging patients and the highest rate of completed suicides occur in older men with depression compared to all other age groups [41]. In many nations of Europe, suicide rates are highest among those aged 60 and older [42]. Some opioid-related overdoses in the elderly that seem accidental may, in fact, be intentional self-harm, and thus it is possible the rate of opioid-assisted elder suicide is under-reported. Cognitive dysfunction, diminished quality of life,

and decreased physical function likely contribute to suicidality among the aged [41]. The role of opioids in this population is not elucidated.

11. The Aged Addict

As part of our research for this article, we met with a 64-year-old man who admitted to many years of OUD. He is paraplegic as a result of a motorcycle accident at the age of 51 and in long-term residential care. He is well educated and was willing to talk openly about his OUD. He consented to a recorded interview for this article because of his interest in the topic of “aging hippies.” We asked him about his lifelong drug use which included marijuana, methamphetamines, alcohol, hallucinogens, cocaine, and opioids.

“I got high for the first time when I was about 15 or 16. Rapidly, within months, progressed using psychedelics, LSD, and so-called psilocybin mescaline ... I didn’t go to college till I was 26 and I had the misfortune to live next to amphetamine manufacturers ... That pretty much took over my life for the whole time I was in college and for years afterward...I stopped completely when I was in my early 30s... In the meantime, sporadic use of opioids ... that progressed to daily heroin use with periods of non-use.”

Although he is still using opioids today, he considers them benign. “I’ve noticed that the drugs that caused the most behavioral problems and the most effect on your judgment were alcohol and amphetamines. The opioids did not have that much of an effect. Pretty much, I would say that opioids are my drug of choice.” When asked how people in his circle of friends with OUD got started, he reported, “Most of the people I know did them [opioids] to get high, but they did not initially get them prescribed by a doctor.”

He described a sense of well-being with opioids and when asked what benefits he derived from opioid use he said simply, “Feeling good.” He had taken opioids for decades (with one six-month period of court-ordered abstinence) and attributes his ability to use opioids long term to his approach to the drug. “I measured,” he began, “and even when I was taking heroin, I would be careful about my dose... I don’t take street heroin anymore because it’s too dangerous. I would use a clean technique rather than a sterile technique. By that I mean I cleanse the skin, I use alcohol, and sterile needles. Occasionally I reuse [my own] needles when I can’t get new ones. I use sterile saline as a solution.” He described the ritual of preparing his drugs—pharmaceutical product manipulated to be injected intravenously—as comparable to a “tea ceremony” and said it heightened the appeal of the drug.

When asked where he found his drug dealers, he said, “It’s almost like a secret society with its own sets of rituals and signals and you suss out very quickly if another person is a member of that society and then you can share your sources.” He said that sometimes he met others in the opioid community by chance. “Sometimes a dealer will offer a reward for a new client.” When asked how to ascertain who was a drug user, he expounded, “You do it in conversation, by making a passing reference and seeing if they react to it. And most people just wouldn’t respond. They wouldn’t catch the reference...” For example, he said he would sometimes ask about “boy” or “girl” to strangers, such as asking where he could get boy. Boy is a street term for heroin; girl refers to cocaine. The in-group recognizes those terms whereas the remark is generally ignored as unintelligible, nonsensical, or even deranged by people outside the group.

“One thing that is surprising is just how many people are involved in this... It’s just staggering. You’d think that it’s a rare phenomenon, but—and I’m not talking about pot, I’m talking about, you know, hard-core drug use—there are significant numbers of people who do this and it’s surprising how many you meet and what kind of people they are ... Many of them are very nice people.”

He abstains from street heroin because of fentanyl adulterants; in fact, he is acquainted with a drug dealer who quit selling drugs and eventually got off drugs herself because of fentanyl and its deadly consequences. “There’s a huge difference between street opioids or heroin and prescription drugs ... The numbers are shocking of how many people die from them [prescription opioids] but I think a lot of them are people who don’t know what they’re doing and people who mix them with alcohol... Another problem, this is what happened with the actor, a fine actor, Philip Seymour Hoffman. He’d been using heroin off and on for years, and he had stopped for a while...You stop for a while, then you use what used to be a normal dosage, but since your tolerance is way down, you overdose... Heroin was always a gamble...You never knew what was in that bag. Prescription drugs, though, are quite safe if they’re used intelligently. Even if it’s intravenously, it’s quite safe.”

When asked about discontinuing opioids, he commented that while some opioid users do want to quit, many do not. “I don’t really want to quit,” he said but when asked how opioid use has impacted his life, he said without hesitation, “I’m sure it’s diminished it... I know I would have been more productive [without opioids] ...It’s damaged relationships. It’s hurt me financially. I’d say without doubt it’s diminished my life.”

In the interview, he was asked among the many people with OUD he knew if any have used opioid recreationally and then did not like the drugs or chose not to continue using them. “Lots of people. And this probably has to do with one’s neurochemistry and physiology. Everyone reacts differently to different medications. Some people find the effects unpleasant... Most of the people that I know that use [opioids] are addicted. But there’s lots of people who just dabble. They call it chipping, where you use it [opioid] and you’re not addicted.”

Overall, he had a positive attitude toward his opioid use. “I’m fun to be around when I’m high on opioids,” he said. Like many people with OUD, he stated that he had a profoundly unhappy childhood, was often neglected, and came from a dysfunctional home. When asked if he would be better off he if had never gotten addicted, he commented on his life. “Oh, unquestionably it would have been better, but, on the other hand, because of my upbringing and stuff, I might have killed myself if it weren’t for opioids. There is no question that it [addiction] damaged my life. It had terrible effects. On the other hand, maybe I wouldn’t be here if I couldn’t have medicated myself. I don’t know.”

12. Discussion

The ingrained image of a young person with OUD meeting a premature opioid-related death has some validity. In a retrospective study of electronic health records from an academic healthcare system, patients with opioid use disorder (n=2,576) have a mortality rate 10 times that of the general population even adjusted for age and sex. Most of the deaths were not directly related to the opioid use (cancer, cardiovascular disorders, infections) but 19% of deaths could be directly attributed to the opioid use, such as overdose [43]. A study of 1,283 heroin users from

Taiwan reported an expected years of life lost (EYLL) for adult addicts after 50 years of survival was 10.6 years for those on opioid substitution therapy compared to 18.4 years to those not on such a program [44]. The elevated rate of opioid overdose deaths in America claims many young lives. But many people with OUD survive even into old age, and clinicians are increasingly facing the aging and aged OUD patient, a clinical enigma about whom very little is written or elucidated.

There is an urgent need to better understand the geriatric OUD patient. Despite the fact that baby boomers are more comfortable with recreational drug use than any other generation in history, seniors with OUD may conceal their recreational drug use and opioid-related health concerns from their healthcare providers. This emerging and rapidly growing population poses serious questions for the healthcare system. How do we treat pain in this population when these elderly addicts need surgery or develop chronic pain? How do we manage their overall health issues? Can a person with a 30-year opioid addiction be successfully rehabilitated? Should we even try? How long does opioid maintenance therapy last—should a patient get methadone or buprenorphine into his 60s and 70s and beyond? Can an 85-year-old patient continue with methadone maintenance? Perhaps most importantly in light of the current public health crisis of opioid misuse, how do we better intervene in the trajectory of opioid use disorder to prevent youthful drug experimentation from becoming a lifelong addiction?

As part of our research into this topic, we interviewed an articulate, educated, lifelong drug user to help us gain his unique perspective on this population. Our interview subject had used opioids for decades, saw no reason to stop, and approached them with certain safety measures (he did not use street heroin, he used a clean injection technique, and he was careful about dosing). Further interviews of other geriatric addicts would be helpful but from his remarks, it is clear that OUD was a reasonable price he was willing to pay for the comfort that opioids brought to him. Our subject was intelligent, open, forthcoming, reasonable, and had a fair amount of insight into his OUD.

The healthcare system must calibrate itself now for the increasing numbers of geriatric patients with OUD who are likely to emerge and require treatment. Assessment tools, therapeutic strategies, intervention techniques, and approaches to maintenance therapy should be evaluated for their appropriateness in the aging population. Physicians must become comfortable asking senior patients about their drug use and divesting themselves of the misconception that OUD is a young person's condition.

13. Conclusions

As the baby boomers move toward retirement age and beyond, they bring with them their relaxed attitudes about drug use. Many geriatric patients have used and may continue to use drugs recreationally, including opioids. Elder patients with OUD pose unique challenges in that little is known about them and there may be specific techniques, treatments, and interventions appropriate for them. For example, aging-related changes in drug metabolism likely impact older patients with OUD but in ways that are not well elucidated. The geriatric OUD patient may seem an enigma to clinicians, but he or she is increasingly common in our healthcare system and they deserve greater attention to their unique needs.

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Author Contributions

JVP defined the initial concept of the paper, directed the research, and read/revised the manuscript at draft and final stages. JVP provided most of the interview questions, reviewed the transcript of the interview, and advised on how to incorporate it into the manuscript.

JL conducted the literature searches, outlined the manuscript, did most of the writing, edited the final version, and interviewed the patient by phone.

Competing Interests

The authors have declared that no competing interests exist.

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