The Growing Problem of Illicit Substance Abuse in the Elderly: A Review

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ABSTRACT

Objective: To explore and integrate the extant data on the subject of illicit substance use and abuse in the elderly and to determine shortcomings in the current understanding of the problem and potential topics of future research.

Data Sources: Ovid MEDLINE was searched (1960–2011) using the keywords *substance use disorders* and *geriatrics*; PsycINFO was searched (1967–2011) using the keywords *drug abuse* and *geriatrics*.

Data Extraction: The searches of Ovid MEDLINE and PsycINFO returned 35 and 85 results, respectively. Other relevant articles were identified by checking reference lists of the identified studies. A total of 26 articles with a focus on use of illicit substances, excluding alcohol, over-the-counter drugs, and prescription drugs, in the elderly were determined to be applicable to the review.

Data Synthesis: Limited data were available to combine between studies, but certain conclusions could be generalized among separate sources.

Results: Geriatric substance abuse is a topic of growing interest, importance, and research; however, most of the existing literature has focused on licit substances. Illicit substance abuse has been incorrectly assumed to end as patients age, whereas in reality, elderly drug users are increasingly common and have a unique profile quite different from that of their younger counterparts.

Conclusions: Geriatric substance abuse is a common problem and includes both licit and illicit substances. There are not yet reliable screening instruments or treatment methods for identification and treatment of illicit substance abuse in the elderly. A high index of suspicion and consideration of illicit substance use as a real possibility are vital for early recognition and diagnosis of such abuse in the elderly.

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In recent years, considerable interest has developed in the topic of substance abuse in the elderly. To date, however, most of the available literature focuses on its most common manifestations: alcoholism and prescription drug abuse. Consequently, until very recently, relatively little attention has been paid to the phenomenon of illicit substance abuse among the elderly. For example, several major substance abuse textbooks include only a single chapter on substance abuse in the elderly and even then focus primarily on the use of licit rather than illicit drugs.[1,2] However, recent data demonstrate that illicit drug use is increasing among elders and indeed occupying a larger proportion of all substance abuse among this population.[3,4] We hope here to address this gap and to draw attention toward an invisible but significant and growing problem.

According to *DSM-IV-TR* criteria, the diagnosis of substance abuse requires a "maladaptive pattern of substance use leading to clinically significant impairment or distress,"[5(p199)] requiring (1) failure to fulfill major role obligations, (2) recurrent use in physically hazardous situations, (3) related legal problems, or (4) continued use despite social or interpersonal problems as a consequence of substance effects. The diagnosis also requires that an individual not meet the criteria for substance dependence.[5] In this discussion, we will narrow the topic to illicit substances, thus excluding alcohol, over-the-counter drugs, and prescription drugs.

The objective of this review was to explore and integrate the extant data on the subject of illicit substance use and abuse in the elderly and to determine shortcomings in the current understanding of the problem and potential topics of future research. Ovid MEDLINE was searched (1960–2011) using the keywords *substance use disorders* and *geriatrics*; PsycINFO was searched (1967–2011) using the keywords *drug abuse* and *geriatrics*. The searches of Ovid MEDLINE and PsycINFO returned 35 and 85 results, respectively. Other relevant articles were identified by checking reference lists of the identified studies. A total of 26 articles were determined to be applicable to the review. Limited data were available to combine between studies, but certain conclusions could be generalized among separate sources.

EPIDEMIOLOGY

Historically, illicit substance abuse has been considered a problem of younger adults; statistically, this remains somewhat true. According to 1 large government study,[6] among nearly 1 million emergency department visits for illicit drug use in 2008, only about 6,000 (less than 1%) involved adults over age 65 years. To put it another way, among adults over age 65 years, the rate of emergency department visits for illicit drug use was only 15 in 100,000 compared to 678 in 100,000 for adult between the ages of 25 to 29 years.[6] Furthermore, it has also been long assumed that drug habits would diminish and vanish with aging. Indeed, at one time the data supported this belief. In 1 study in 1962, fully 50% of narcotic addicts were no longer active drug users by age 32 years, and over 99% were no longer using drugs by age 67 years.[7] However, in recent decades, the profiles of substance abuse have changed considerably, in both younger and older adults, and this pattern no longer appears to hold.

Clinical Points

- Geriatric substance abuse is a common problem and includes both licit and illicit substances.
- There are not yet reliable screening instruments or treatment methods for identification and treatment of illicit substance abuse in the elderly.
- A high index of suspicion and consideration of illicit substance use as a real possibility are vital for early recognition and diagnosis of such abuse in the elderly.

It remains a challenge to find clear data relative to the frequency of illicit substance abuse in the elderly; limitations include small study sizes, heterogeneous populations, varying definitions of "elderly" (ranging from ages 50 to 65 years), and different patterns of use. For example, elderly substance abusers are less likely to become involved in drug-related criminal activity and thus are not represented on the "street drug scene," leading to underestimation of their numbers. It has also been suggested that substance abuse in younger adults leads to foreshortened lifespans and thus underrepresentation in older adults.[8]

Nevertheless, recent data demonstrate the presence of a small (prevalence less than 1%) but definite subpopulation of elderly substance abusers.[8] This prevalence is considerably higher among individuals presenting to emergency departments (among whom 1 study demonstrates marijuana, cocaine, and opioid use in 2.4%, 1.9%, and 11.6% of elderly men, respectively)[9] and yet higher among prisoners (among whom 31% of those over age 55 years reported current problematic illicit drug use).[10] The number of elders requiring treatment for substance abuse is also expected to rise dramatically in the coming years and will double by 2020 for reasons described more fully below.[3,11]

Among older adults with illicit substance abuse problems, the frequency of abuse declines with age. One large study describing emergency department admissions in 2008 for illicit substance abuse among adults over age 50 years noted that nearly 60% were aged 50 to 54 years, while only 1.5% were over age 75 years.[12] In the same study, the population was largely male (about 70%) and approximately 60% were black, 30% were white, and 10% were Hispanic. The substances most commonly abused include cocaine (approximately 50%–60% of cases), heroin (approximately 25%), and marijuana (approximately 20%); interestingly, younger elders (aged 50 to 64 years) showed greater preference for cocaine and heroin, while older elders (aged ≥65 years) preferred cocaine and marijuana. Fifty percent of substance abusers returned for postdischarge treatment, with all 3 drugs showing similar rates.[12]

PATTERNS OF ILLICIT SUBSTANCE ABUSE AMONG THE ELDERLY

In discussing substance abuse among the elderly, 2 general, long-term patterns of use appear: "early-onset" and "late-onset" users, as described by Roe et al.[13] The first group includes individuals with a long history of substance abuse, who continue to abuse as they age; the latter includes individuals who develop a new habit as elders. To date, there are no clear data exploring the frequency of one or the other pattern among elderly substance abusers or how this influences the drug of choice. We can speculate that particular substances might be more frequently abused by persons following one or the other pattern, but for the time being, the field awaits more definitive data.

Early-Onset Illicit Substance Abuse

Early-onset illicit substance abuse in the elderly is, by definition, a product of abuse earlier in life and a massively complex phenomenon with a large body of research literature. The context of new-onset substance use in middle-aged or younger users is related to many factors, including social class, race (itself closely tied to socioeconomic factors), gender, availability, and life story.

For example, Pope et al[14] have explored the separate histories of drug use in whites and blacks since the early 20th century, including the stigmatization and marginalization of racial groups using stereotypical or exaggerated claims about drug use in news and entertainment media. More specific to this discussion, Pope et al[14] note that, among the current cohort of African American elders, many came of age in the 1960s and early 1970s, a time when they would have been confronted with numerous exploitative films and books glamorizing a drug-centric lifestyle, particularly focused on cocaine and heroin. At the same time, the largely white population of young adult "hippies" was simultaneously exploring LSD (lysergic acid diethylamide) and marijuana[15]—drug habits that would be significantly easier to break with time, excepting the questionable role of marijuana as a "gateway drug."[16,17] In any case, in aging, long-standing drug users have been faced with widespread changes in the drug culture, "old school" to "new school," resulting in further marginalization and relative invisibility and making them all the more difficult to reach through tried-and-true interventional methods.[18]

Less obvious than the initial stimulus for drug use in young and middle adulthood are the factors that influence continued use into late adulthood. We may speculate that the most influential factors are those that also determine successful cessation among drug users at large—another complex, well-researched phenomenon. Positive predictors might therefore include effective treatment and family support, while negative predictors would include involvement in crime, ongoing social pressure to use, continued availability of substances, or comorbid psychiatric disease.[19]

Late-Onset Illicit Substance Abuse

Late-onset substance abuse is a much less common pattern, accounting for < 10% of substance abuse among the elderly.[3] A variety of potential causes have been cited for such new-onset substance abuse. Medical factors include higher rates of painful medical conditions that push an elder toward

self-medication and development of psychiatric conditions including depression, dementia, and other causes of cognitive impairment.[10] Older adults also suffer from higher rates of many of the same social risk factors prompting new use in younger adults (bereavement, social isolation, financial difficulties, or poor support systems).[11,19,20] Conversely, certain circumstances commonly linked to new-onset substance abuse in adolescents and young adults (eg, involvement in drug crime, exposure to drug use in the home, new onset of mental illness) are less likely to be relevant for older individuals; as mentioned above, we suspect that these differences may be reflected in the substances of choice.

ABUSE OF SPECIFIC DRUGS

We have already mentioned the differences in substances of choice between elderly and younger substance abusers and the limitations in current data. It is relevant to briefly discuss the consequences of specific drugs on the elderly patient, separate from the patterns of their use.

Cocaine

Much of the literature on cardiac and neurovascular effects of cocaine has compared the age of affected drug users to that of nonusers with the same affliction. For example, 1 article notes that cocaine abusers are more likely to suffer the rupture of a cerebral aneurysm at a younger age (32.8 years compared to 52.2 years), and with a smaller aneurysm diameter (4.9 mm compared to 11.0 mm), relative to their non–cocaine abusing counterparts.[21] Another article shows that, among patients with a recent myocardial infarction, cocaine users were on average significantly younger than nonabusers (44 years compared to 61 years).[22] Additionally, older adults are intrinsically predisposed to several of the most dangerous consequences of cocaine abuse, including myocardial infarction, cerebrovascular accident, delirium, and heat stroke. Although it may be that the risk factors of age and cocaine use are not strictly cumulative, and no current data can demonstrate this assertion directly, we suggest that among elders, cocaine use would raise the risk of these events to levels even higher than in younger substance abusers or their elderly nonabusing peers.

Heroin

To date, most of the discussion of opioid addiction focuses on prescription opioid abuse, and indeed, many of the effects—both pleasurable and unpleasant—are uniform among licit and illicit opioids and have been discussed at length elsewhere. Certainly in recent years, prescription opioids have supplanted heroin as the opioid of choice, including among the elderly.[23] However, particularly among the early-onset users described above, heroin has been so long a drug of choice that changing trends are not immediately reflected among elderly users.

Separate from its immediate effects, heroin use over longer periods of time ("length of career") is also associated with negative social and health-related outcomes. Each year of use increases the likelihood of continuing heroin use the following year by 3% each year; similarly, continued use increases the likelihood of having a severe physical disability by about 5% per year.[24] Long-term use is also characterized by a gradual decline in global mental health. Interestingly, Darke et al[24] note that aging heroin users do not seem to temper their use over time and in fact face many of the same risks as their younger counterparts (some of which, as mentioned, appear to be cumulative over time).

Marijuana

Cannabis stands apart from heroin and cocaine in the unique patterns of its use, particularly among the elderly. In younger adults, marijuana use typically begins in the teen years and sharply drops off in the early 30s; most use is occasional or experimental.[25] Marijuana use in younger adults is often in the context of socialization and association with a particular subculture, and only a relatively small portion of users (approximately 10%–20%) partake on a daily basis.[25] In contrast, cannabis use among elders rarely represents continued or residual use initiated earlier in life and is not usually a social activity; more frequently, it is initiated anew for the sake of its effects on stress, appetite, and pain. As an aside, the proper role for so-called "medicinal marijuana" within contemporary medicine, and society as a whole, is a subject of continued debate, which we will not explore in depth here.

Among cannabis users as a whole, a strong association is apparent with cannabis use and certain Axis I disorders, particularly major depressive disorder, bipolar disorder, and schizophrenia; however, whether marijuana use causes these disorders to manifest, or whether increased use represents so-called "self-medication," is unclear and the subject of continued debate.[17] In any case, it is unusual for the latter 2 diseases in particular to manifest for the first time in the elderly.

The largest body of research regarding the effects of cannabis use is centered on its cognitive effects; this is also the area of most practical significance clinically. Effect on academic achievement, while a significant topic among younger users, is less relevant among the elderly; however, another well-researched topic is the effect of cannabis on driving performance, which remains relevant throughout life. Specifically, acute cannabis intoxication seems to increase latency times and decrease ability to respond to stimuli; the concurrent use of cannabis and alcohol increases accident risk further. The question of permanent cognitive deficits from marijuana use is a topic of continued discussion, but it seems likely that chronic use produces chronic deficits even after extended abstinence.[17] Considering that older individuals seem predisposed to delirium-inducing or adverse cognitive effects of medications in general, one might presume that they are particularly prone to similar effects from marijuana.

Cannabis also exerts several nonpsychiatric effects, particularly on the respiratory, immune, and cardiovascular

systems.[17] Contrary to popular belief among users, marijuana smoke actually contains more carcinogens and tar than filtered tobacco smoke; additionally, the drug itself acts as a bronchodilator, allowing better penetration of toxic substances throughout the lungs.[17] Because of its respiratory effects, marijuana use also appears to increase the cardiac workload; while a healthy young user can adapt to this demand relatively easily, presumably, older adults, many of whom have preexisting cardiac morbidity, are more likely to experience an adverse cardiac event.[17]

RECOGNITION OF ILLICIT SUBSTANCE ABUSE IN THE ELDERLY

Diagnosis of drug abuse in the elderly presents a unique challenge for the primary care physician. In many cases, an elderly patient will have various other complaints and medical issues, and the physician may understandably become absorbed with these concerns and neglect to explore the possibility of substance abuse. Additionally, geriatric patients, like substance abusers of all ages, often feel compelled to hide their abuse from the physician and may understate or attempt to explain away their symptoms. Finally, many of the behavioral signs and symptoms that in a younger adult might suggest drug intoxication or withdrawal as a possibility can just as easily be brought under the umbrella of dementing illness and thus be improperly or inadequately treated.[19] The most important step in recognition of elderly drug abuse, therefore, is simply considering it as a possibility. There are also factors shown to affect the likelihood of an elderly substance abuser to seek treatment; greater educational background, higher cognitive status (reflected in Mini-Mental State Examination scores), and more severe symptoms of substance abuse or comorbid psychiatric disease all make a patient more likely to seek treatment.[26]

Blow and Barry[1] provide a table of potential indications of alcohol abuse in the elderly, with the subheading, "Time to Ask Questions." These criteria are potentially relevant for illicit drug abuse as well and include changes in cognition, mood, memory, hygiene, nutrition, and sleep, and all are common complaints for which elders approach their primary providers. Another option is to address the topic directly. Two examples of screening questions that have been validated in younger adult populations include, "Have you used street drugs more than 5 times in your life?"[27] and "How many times in the past year have you used an illegal drug or used a prescription medication for nonmedical reasons?"[28] The Florida Brief Intervention and Treatment for Elders (BRITE) project demonstrated the effectiveness of a standardized screening interview for substance use and abuse; while it identified only a handful of illicit substance users (compared to a large number of prescription drug and alcohol abusers), the project's results bode well for the possibility of an effective illicit drug use screening test geared toward the elderly.[29] Unfortunately, to date, there are no validated screening questionnaires for substance abuse in the elderly, requiring the clinician to rely on his or her own careful observation and judgment.

Table 1. Risk Factors for Substance Abuse Among the Elderly[a]

Risk Factor
"Young" elder, unmarried, male
Low income status
Previous illicit substance use
Current methadone maintenance
Licit drug or alcohol use
Comorbid mental illness, especially depression and/or anxiety
Substance abuse among close contacts
Involvement in crime, especially drug crime
Social isolation/poor social support
Inmate status

[a]Based on Wu and Blazer,[3] Rosen et al,[18] and Briggs et al.[20]

Wu et al[3] note that there may be several potentially protective factors against drug use among the elderly. Among these factors are marital status, never using alcohol or tobacco, and regularly attending religious services.

As for many diseases, recognizing the common risk factor profile for substance abuse among elders increases its early recognition by primary care providers. Table 1 summarizes the risk factors discussed above to aid early diagnosis.

TREATMENT OF ILLICIT SUBSTANCE ABUSE IN THE ELDERLY

There are relatively few data about the particular challenges of treatment among elderly drug abusers. Much of the existing infrastructure for treatment (similar to the drug scene itself) is geared toward younger users, which may leave older patients feeling alienated. However, certain factors significant for the treatment of younger adults have been shown to apply to elders as well. Pope et al[14] note that family participation and history (long recognized for its role in affecting outcomes of drug use earlier in life) remain significant even into older adulthood. For example, having a close family member who is a past or present user appears to make new or continued drug use a more acceptable option; therefore, addressing both this attitude and the presence of negative influences is important in shaping a patient's outcomes.[14]

Another point to consider is the ideal setting for treatment of elders with a substance problem. Age-integrated treatment programs (ie, those in which older and younger adults are treated side-by-side) have fared well in the treatment of alcohol abuse in the elderly, but it is less clear whether this would apply to illicit substances.[13] Conversely, there are a growing number of support groups specific to alcoholism in the elderly (eg, Seniors In Sobriety, an offshoot of Alcoholics Anonymous), but, as of now, few are specific for illicit drugs. Clearly, elderly substance abusers benefit from treatment tailored to their particular needs and experiences when available.[3,20] The complicated medical needs and relative frailty of many elderly patients should lower a clinician's threshold for

admission and inpatient treatment. But in such a case, will the patient receive the most appropriate care on a devoted geriatric psychiatry ward, in which providers may be many years removed from experience with illicit drug use, or on one designed for the treatment of illicit drug use, in which experience with elderly patients may be similarly limited? Interestingly, the Primary Care Research in Substance Abuse and Mental Health for the Elderly study demonstrated no difference in efficacy in the treatment of elderly alcoholics between those receiving brief intervention sessions at a primary care clinic and those receiving subspecialty care at mental health or substance abuse clinics.[30] Whether this finding is applicable to illicit substance abuse has yet to be seen and should not deter primary care providers from timely consultation with experts in geriatric mental health or substance abuse. For the time being, the best solution may be consultation with multiple specialty teams, although bringing more attention to elderly illicit drug users will hopefully encourage providers to become comfortable in all aspects of their care.

The increased susceptibility of older adults to adverse effects of many substances (a phenomenon familiar to anyone with experience in the medical care of older adults) is also relevant to substance abuse treatment. Physiologic changes related to aging, including decreases in total body water and lean mass with a reciprocal increase in total body fat, alter the metabolism of various drugs, often resulting in smaller effective or toxic doses and lower half-lives. Many elderly individuals also have comorbid medical disease, for example, diabetes or other causes of kidney disease, affecting drug excretion or other aspects of metabolism.[31] Not only are the elderly more prone to adverse psychotropic effects of abused substances, they are also vulnerable to the deliriogenic effects of certain treatments (for example, opioids, sedative-hypnotics, and medications with anticholinergic effects).[32] An older adult with underlying dementing illness (even at a subclinical level, such as mild or subjective cognitive impairment) is more prone to drug-induced delirium and more likely to have a prolonged recovery from an episode. Therefore, in beginning substance abuse treatment among elders, starting slow with less intense treatment (eg, cognitive-behavioral or brief interventions) is preferable to the high-intensity regimens that might be used among younger adults.[20]

Substance abuse disorders in older adults, as in younger adults, are frequently comorbid with other psychiatric disorders, including depression, anxiety disorders, adjustment disorders, and bereavement.[1] The relative dearth of certain psychiatric disorders in older adults, for example, the rarity of chronic psychotic disorders in many geriatric psychiatric practices, may relate to the different spectrums of substances abused. As in younger adults, integrated treatment of both disorders by a single treatment team is ideal, though at present, relatively few providers can be expected to have in-depth knowledge and experience with both geriatric disorders (eg, late-life depression or dementias) and illicit substance use disorders.

CONCLUSIONS AND FUTURE DIRECTIONS

As should be evident from the preceding discussion, the greatest limitation to a modern understanding of illicit substance abuse among the elderly is the lack of data. In the future, as awareness of this phenomenon grows and clinicians begin to consider it as a possibility, hopefully studies of illicit drug use will expand their populations to include a greater number of older adults, and more studies will appear focusing particularly on the elderly. In order to achieve this goal, researchers must understand the difficulties in detecting illicit drug abuse among the aged compared to their younger counterparts, as discussed above. Several years from now, many of the suggestions in this article may be either confirmed or repudiated in the face of better information.

Beyond simply better data on the topic, another potential direction for future research might be the development of screening instruments for elderly illicit substance use and abuse. On the one hand, there are several validated screening instruments for clinical recognition of alcohol abuse disorders, including some specifically adapted for older adults (eg, the Michigan Alcoholism Screening Instrument—Geriatric Version and its shortened version); others, such as the popular CAGE questionnaire (Cutting down, Annoyance by criticism, Guilty feeling, and Eye-openers), appear to be less sensitive among older adults.[1] On the other hand, there are relatively few validated screening instruments for illicit drug abuse even among higher-prevalence populations (adolescents and young adults), much less instruments that have been validated in the elderly.[3] As mentioned above, the Florida BRITE project, while better geared toward prescription drug and alcohol abuse among the elderly, demonstrates the possibility of effective substance abuse screening among this population.[29]

Drug name: methadone (Methadose and others).
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