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HEALTHY AGING RESEARCH

Substance use disorders in late life: A review of current evidence

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Abstract

Although not as commonly reported as in younger individuals, substance use disorders are not uncommon in late life. Given the growth in the population of older adults in the United States, it is estimated that the number of older adults with a substance use disorders will increase significantly in the future. Available evidence indicates that current diagnostic criteria are less sensitive in identifying substance use disorders in late life compared to younger individuals. It is expected that the development of specialized screening tools and specific diagnostic criteria for older adults will improve the diagnostic accuracy for substance use disorders in late life. Routine screening for substance use disorders and prompt interventions will also improve outcomes in these individuals. Available data indicate that older adults with substance use disorders respond as well as younger adults to treatments, if these treatments are specifically designed for this age group.

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Introduction

Given that the United States has an aging population, there is concern regarding the potential for an increase in substance use disorders among these individuals [1]. In contrast to younger individuals – among whom commonly abused drugs include marijuana, cocaine and heroin – older adults tend to abuse alcohol, nicotine and prescription medications [2]. Despite concerns regarding the potential for a significant increase in substance use disorders in late life, there is a considerable dearth of current data [2, 3]. In this article we review available data on substance use disorders in late life.

Epidemiology

Over the next three decades the percentage of individuals between the ages of 65 and 74 years is projected to increase from 6% to 9%, while the percentage of those aged 75 years or older will almost double from 6% to over 11%. Older adults are considered to be an at-risk population for psychoactive drug use [3]. There is evidence to suggest that aging is associated with health-related concerns and psychosocial stressors that can increase exposure to psychoactive medications and promote drug use [3]. Current data indicate that at least one in four older adults has used psychoactive medications with an abuse potential, and this number is expected to rise over time [2]. By 2020, the number of older adults (≥65 years) with substance use problems is projected to reach close to 2 million [4].

Current estimates indicate that approximately half of those individuals ≥ 65 years in age, and about one-quarter of those ≥ 85 years in age drink alcohol [5]. The 2005–2007 National Surveys on Drug Use and Health found approximately 43% of surveyed individuals aged ≥ 65 years in age had consumed alcohol in the past year [6]. Approximately 6.7% of these individuals reported alcohol abuse, dependence, or dependence symptoms. Among those who said they had consumed alcohol in the past year, approximately 15.4% of those ≥ 65 years in age indicated symptoms

of alcohol abuse or dependence. Tolerance and time spent drinking were the two most frequently endorsed symptoms. An evaluation of the National Survey found that 13% of men and 8% of women in the ≥65 years age group reported at-risk use of alcohol [7]. In this sample, more than 14% of men and 3% of women reported binge drinking. Compared to those who consumed no alcohol, binge drinking was associated with having a higher income, and in men, being separated, divorced or widowed. The use of tobacco and illicit drugs were risk factors for binge drinking among all the individuals surveyed [7]. The investigators also found that African American women had a relatively high rate of binge drinking when compared to Caucasian women: 10% versus 6%.

It is estimated that approximately 30% of older adults admitted to medical units, and about 50% of those individuals hospitalized to psychiatric units present with alcohol use disorders [5]. Data from hospital admissions show a changing trend among older adults with substance use disorders [2]. Between 1995 and 2005, the proportion of admissions for alcohol as the primary substance of use decreased from 84.7% to 75.9%, whereas the proportion of admissions increased significantly for opioids/heroin (from 6.6% to 10.5%), cocaine (2.1% to 4.4%) and sedatives (0.5% to 1.3%) [8]. Compared with younger individuals, older adults also had no prior treatment episodes (43.2% versus 36.9%) and used only one substance at admission (77.1% versus 46.0%) [9]. A smaller proportion of individuals also reported using opioids/heroin (14.3% versus 21.1%) and cocaine/crack (5.4% versus 16.8%). However, admission rates were similar among both age groups for primary substance use disorders (55.6% versus 51.4%), and for referral from the criminal justice system for treatment (25.4% versus 28.0%).

The 2008–2009 US National Surveys on Drug Use and Health indicated that the number of people who had used tobacco in the past year was approximately half as frequent among individuals ≥65 years in age when compared to adults aged 50–64 years: 14.1% versus 30.2% [10]. Among older individuals, lower income, single relationship status, binge drinking, and illicit and non-medical drug use were noted as risk factors for cigarette smoking.

The 2005 and 2006 National Surveys on Drug Use and Health found that 0.7% of adults aged ≥65 years used marijuana in the past year, and 0.04% used cocaine in the past year [11]. The numbers of older people using inhalants, hallucinogens, methamphetamine and heroin were also low at <0.2% [11]. Males aged between 50 and 64 years in age who were separated, divorced, widowed or never-married, and had a past-year history of major depression had increased odds of marijuana use. The same characteristics, plus being of Native American or black race, and unemployed, increased odds of cocaine use. Approximately, 11.7% of past-year drug users (marijuana, cocaine, inhalants, hallucinogens, methamphetamine, and heroin) aged 50 years or older met the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) criteria for a past-year drug use disorder.

Cross-sectional data analysis of a national community survey of individuals aged ≥50 years found that non-medical use in the past year of prescription opioids (1.4%) was more prevalent than non-medical use of prescription sedatives (0.14%), tranquilizers (0.46%), and stimulants (0.16%) [12]. Additionally, it was noted that the overall past-year prevalence of prescription opioid use disorders among individuals ≥50 years old was low (0.13%), but the risk of prescription opioid dependence was high (7.6%) compared to the risk for abuse (1.7%) among non-medical opioid users.

It is estimated that approximately 10–50% of older adults have used benzodiazepines in any given year [13]. A community survey of individuals aged ≥65 years found that 3.3% of women and 0.8% of men met DSM-IV criteria for past-year benzodiazepine dependence [14]. Of these, 9.5% of the individuals met the criteria for longer term benzodiazepine dependence [15]. Risk factors associated with benzodiazepine dependence in older adults include female sex, having cognitive impairment, panic disorders, suicidal ideation, and a degree of embarrassment in obtaining help for emotional problem [16].

Risk factors

Factors that increase the risk for substance use among older adults include a previous history of substance abuse, comorbid psychiatric illness, and cognitive impairment [12, 15]. Mitigating factors include being married, no previous history of substance abuse, and a religious affiliation [11, 12, 17]. Available data indicate that substance use disorders are moderately to highly heritable [18]. Studies indicate that an individual's risk tends to be proportional to the degree of genetic relationship to an addicted relative. Heritability rates for substance use disorders range from 0.39 for hallucinogens to 0.72 for cocaine [18].

Consequences

Substance use disorders in late life result in poor medical outcomes and a greater economic burden for care [2]. Chronic use of psychoactive substances in late life can cause adverse central nervous system effects even at therapeutic doses [19]. These include reduced psychomotor performance, impaired reaction times, loss of coordination, ataxia, falls, drowsiness, confusion, rage, and amnesia. Additionally, the use of psychoactive drugs may lead to the development of physiological dependence. Withdrawal symptoms may be encountered when these drugs are discontinued abruptly. Substance use may also result in drug interactions with other prescribed drugs or over the counter medications, and this may lead to serious adverse effects including death [2].

Substance abuse in the elderly can result in multiple medical disorders including cardiac, hepatic, and renal diseases at rates higher than in younger patients [20]. Available evidence indicates that substance abuse in the elderly results in significant disability, morbidity and mortality rates [21].

Comorbid conditions are not uncommon in older adults with substance use disorders. One study found that approximately 20% of hospitalized older adults with psychiatric disorders had a comorbid substance abuse disorder [22]. Another study evaluating older adults who were receiving outpatient care found that the majority of these individuals (>90%) had comorbid substance use disorders [23]. Another study found that men with a history of heavy drinking for five years or more at some time in their lives have a greater than five-fold risk of psychiatric disorders [24]. Older adults with substance use disorders have higher rates of depression and suicides than age-matched controls [25, 26].

The overall cost of substance use disorders in the United States is estimated to be >$100 billion per year [19]. Available data indicate that the economic costs associated with substance use disorders in late life is high due to greater morbidity, and potentially more serious health problems in this age group. Furthermore, these individuals tend to stay in hospital as inpatients for longer, and need more outpatient visits to manage their symptoms when compared to age matched controls [27, 28].

Evaluation

Substance use disorders among older adults are often under-diagnosed [19]. Barriers to proper identification and treatments include insufficient knowledge of the disorders, denial of the condition, stigma and/or the shame of using substances with abuse potential. Other barriers include a reluctance to seek professional help, a lack of financial resources, and lack of social support. Additionally, the presence of comorbid conditions, limited time spent with primary care physicians, and ageist attitudes towards mental health issues among older adults contributes to the inaccurate diagnosis of substance use disorders among older adults.

The symptoms of substance use disorders can often be difficult to recognize in late life [3]. When used with older adults, standard diagnostic criteria such as the DSM-IV text revision (TR), which have been validated in younger and middle aged patients, tend to underestimate the prevalence of substance use disorders in this population [3, 29]. The DSM-IV-TR criteria for substance dependence, such as tolerance and activity reduction, may not apply to this population [30, 31]. The aging process alters the body's ability to develop tolerance to drugs [32]. Older adults may demonstrate greater substance-related problems even though their patterns of use have remained stable [32]. Also, age-related physiological changes can increase the effects of

tolerance and withdrawal leading to protracted symptoms [3].

Cognitive decline may impair the recall of symptoms of substance abuse or dependence [3]. Also, social effects of drug use may be less prominent in older adults given age-appropriate changes in social roles [3]. In addition, these individuals may be less active to begin with and hence detection of social role impairments due to substance use may be difficult to detect [32]. Signs and symptoms of substance use disorders such as recurrent falls or memory deficits may often be attributed to, or be masked by, comorbid illnesses, and/or attributed to the normal aging process [20].

Gives the issues in using standardized diagnostic criteria to assess substance use disorders in older adults, it is recommended to use a two-tiered categorical classification for these individuals: 'at-risk use' and 'problem use' of substances. At-risk use is defined as using substances above the recommended or prescribed levels without noticeable adverse outcomes associated with the use of the substance. Problem use is defined as the use of substances resulting in adverse outcomes irrespective of the dose of substance used, frequency of its use or duration of use [19].

The Consensus Panel of the Treatment Improvement Protocol (TIP) recommends that adults ≥60 years should be screened for alcohol and prescription drug use disorders as part of a regular physical examination [19, 33]. Since older adults tend to visit their primary care providers more frequently, these evaluations provide an ideal opportunity to screen for substance use disorders [34]. Community-based programs for screening and brief interventions have improved the recognition and treatment of substance use disorders in older adults [35].

The use of screening instruments can aid the diagnosis of substance abuse in late life [20]. The Michigan Alcohol Screening Test (MAST) has been modified for use in older adults (MAST-G) [36]. It has been shown to have excellent sensitivity and good specificity for alcohol abuse [36]. The Cutdown, Annoyed, Guilty, Eye-opener (CAGE) screening test – modified to include other substances of abuse – has been shown to have excellent sensitivity, although has poor specificity when used in older adults [36, 37]. The Alcohol Use Disorders Identification Test-5 Item Version (AUDIT-5) is another instrument that has demonstrated sensitivity and specificity in identifying problematic use of alcohol in older adults [38]. Additionally, the use of computerized screening tools such as the Drug and Alcohol Problem Assessment for Primary Care (DAPA-PC) has been useful in identifying and addressing substance use disorders in older adults within the primary care setting [34, 39].

Treatments

Current evidence indicates that treatment of substance use disorders are as effective in older adults as in younger individuals [40, 41]. Data indicate that outcomes are better in older women and with longer treatment length [42]. Older individuals require specialized treatments given their age-related physical changes, health status and comorbidities [2, 43]. These individuals do better with inpatient treatments and with closer monitoring for drug interactions and treatment side effects [2, 43].

The TIP recommends that less intensive treatment options, such as brief intervention strategies, and motivational counseling, should be used initially in the treatment of older individuals with substance use disorders [19]. If these less intensive strategies do not resolve the individual's drug use problems, they can be moved to specialized treatment programs. In order to be successful in older adults, treatments for substance use disorders need to be non-confrontational and supportive [3]. The most successful strategies are those addressing age-specific psychological, social and health concerns [3].

The TIP also recommends cognitive-behavioral approaches, group-based treatments, individual counseling, medical/psychiatric treatments, marital and family involvement or family therapy, case management, community-linked services, and outreach programs [19]. Some specific components of these treatments to improve outcomes in older adults include the emphasis on age-specific treatment, the use of supportive, non-confrontational approaches that build self-esteem, emphasis on cognitive-behavioral approaches, development of skills to improve social support, using counselors who are trained and

motivated to work with older adults, and the use of age-appropriate pace and content [3, 19].

Acamprosate, buprenorphine, bupropion, disulfiram, methadone, naltrexone, nicotine and varencline are US Food and Drug Administration (FDA)-approved medications to treat substance use disorders in younger individuals [44, 45]. Pharmacotherapeutic management of substance use disorders in older adults are most often extrapolated from studies of younger adults, or from mixed-age population studies [46]. Among these medications, only naltrexone has been specifically studied for substance use disorders in older adults [47, 48]. In the first study, naltrexone use was found to reduce relapse rates in older, alcohol-dependent individuals when compared to placebo-treated individuals [47]. In the second study, naltrexone use in older alcohol-dependent adults was associated with a higher rate of treatment engagement, greater medication adherence, and reduced relapses when compared to younger individuals [48]. In both studies, naltrexone was well tolerated by older individuals.

Alcohol and drugs withdrawal may be more intense and prolonged in older adults [2, 42]. In these individuals, detoxification should be preferably done within an inpatient setting. Dosages of the drugs used in the detoxification process are also often lower than those used in younger individuals [2]. Careful attention should be paid to drug–drug interactions, since these are more common in older individuals [2].

Future directions

Although the DSM-5 diagnostic criteria for substance use disorders are an improvement on the previous DSM-IV-TR criteria, they are still relatively insensitive when making diagnoses in older individuals [49]. Future refinements of diagnostic criteria must include the provision for making age-appropriate diagnoses of substance use disorders. Additionally, developing screening instruments that are specific to the assessment of different types of substance use disorders in older individuals, such as the SMAST-G and AUDIT-5 criteria, would have a better yield in identifying these disorders [26]. Screening tools such as the National Institute on Drug Abuse (NIDA)-modified Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) Instrument may also be modified and adapted for screening for substance use disorders in older individuals [35].

Available evidence indicates that older adults with substance abuse disorders respond to intervention strategies as well as younger individuals [46]. However, there are no controlled data specific to this population that identify the best interventions and the reasons for their success. Furthermore, there are only two controlled medication trials that have been specifically designed for older individuals with substance use disorders. The design of new intervention or medication trials for older adults will enable the development of evidence-based management protocols to optimize the care of these individuals. Additionally, these trials should evaluate the underlying mechanisms for the success or failure of these interventions. Although multicomponent management strategies have been evaluated in older at-risk alcohol users with some success, these types of interventions should be extended to other substance use disorders, given the high rates of comorbidities and psychosocial issues in this population [50, 51].

Older adults are most often evaluated by primary physicians, not specialists. Therefore, the assessment of older individuals for substance use disorders should begin in the primary care physician's office [26]. Additionally, these individuals should receive close follow-up with frequent telephone contact from a health educator [52] to reduce their use of substances. Furthermore, studies should evaluate the use of mobile health interventions that can increase access to healthcare for older adults with substance use disorders who might otherwise not seek treatment due to various psychosocial issues, including the fear of being stigmatized or isolated [53].

Conclusions

Available data indicate that substance use disorders are not uncommon in late life. It is estimated that the number of older adults with a substance use disorder will continue to increase significantly in the future. Current diagnostic criteria are less sensitive in identifying substance use disorders in late life than in younger adults. The development of specific

diagnostic criteria and specialized screening tools for older adults will improve diagnostic accuracy. Additionally, routine screening for substance use disorders during primary care visits, and close follow-up for at risk or individuals with substance use disorders followed by prompt interventions, will improve the outcomes in these individuals. In addition, available data indicate that older adults with substance use disorders respond as well as younger adults to treatments, if these treatments are specifically designed for the older age group. Future management strategies should include both psychosocial and pharmacotherapeutic components aimed at optimizing outcomes in these individuals.

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