Journal of the Neurological Sciences 338 (2014) 122–127

Contents lists available at ScienceDirect

Journal of the Neurological Sciences

journal homepage: www.elsevier.com/locate/jns

Alcohol and substance use in multiple sclerosis ☆

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ARTICLE INFO

Article history:
Received 16 May 2013
Received in revised form 3 December 2013
Accepted 17 December 2013
Available online 27 December 2013

Keywords:
Multiple sclerosis
Alcohol use
Drug abuse
Depression
Anxiety
Disability

ABSTRACT

Background: Few studies have examined the prevalence of alcohol and drug use in individuals with multiple sclerosis (MS). The current study sought to examine the prevalence and associated demographic, disease-related, and psychological correlates of substance use in an East Coast United States outpatient MS sample.
Methods: 157 individuals with MS completed questionnaires prior to, during or after their visit with an MS neurologist. These questionnaires included: the Alcohol Use Disorders Identification Test—Consumption (AUDIT-C), CAGE, CAGE—Adapted to Include Drugs (CAGE-AID), Patient Health Questionnaire—9 item (PHQ-9), Beck Depression Inventory—Second Edition (BDI-II) and Hospital Anxiety and Depression Scale—Anxiety (HADS-A).
Results: On the AUDIT-C, 40% of individuals with MS met or exceeded the cutoff for excessive alcohol use. They were more highly educated and younger than non-drinkers. Utilizing the CAGE, 6% of the sample met criteria for a lifetime history of excessive alcohol use and men endorsed higher rates of alcohol use than women. Only a small portion of the sample endorsed a history of drug use (CAGE-AID, 4%). Drug use was associated with greater disability and depression symptoms, but lower self-reported anxiety.
Conclusions: Current alcohol use was prevalent in this sample, and excessive use was associated with men, younger age, and more education. Reported drug use was minimal and associated with greater disability, more self-reported depression, but fewer anxiety symptoms.

1. Introduction

Substance use disorders are defined as maladaptive patterns of alcohol or drug use that lead to clinically significant impairment or distress [1]. Excessive consumption of alcohol has been linked to many health conditions including but not limited to: cancer (lip, oropharyngeal, oesophageal, liver, laryngeal, and breast), epilepsy, hypertension, coronary heart disease, cardiac arrhythmia, stroke, liver cirrhosis, acute pancreatitis, spontaneous abortion, low birth weight and psoriasis [2]. Furthermore, even minimal consumption is associated with increased risk of dementia, coronary heart disease, hypertension and obesity [3]. Screening questionnaires can help clinicians assess for alcohol problems such as excessive and risky use (e.g., AUDIT-C) or abuse and dependence (e.g., CAGE) [4].

In 2008, a national epidemiological study by SAMHSA reported that 8% of the general population (12 and older) was currently using illicit drugs and 2.5% were using prescription drugs (tranquilizers, stimulants and sedatives) for nonmedical purposes. Marijuana was found to be the most common. Marijuana was used by 75.7% of current drug users and for 57.3% of them, it was the only substance used [5]. Illicit drug use is associated with a number of negative health consequences including: increased mortality, blood-borne infections (e.g., HIV, hepatitis C, and hepatitis B), cardiovascular disease, cirrhosis, pulmonary disease and mental health diagnoses [6]. Similar to alcohol, questionnaires such as the CAGE-AID (Adapted to Include Drugs) [7] were developed to help clinicians screen for use of drugs that could impact health.

While much is known about substance use in the general population, only a limited number of studies assessed the drinking and drug use habits of individuals with multiple sclerosis (MS). Multiple sclerosis (MS) is a chronic and progressive disease of the central nervous system (CNS), characterized by inflammatory demyelination and neurodegeneration, which results in destruction of both white and gray matter in the brain and spinal cord. Thus, disease presentation is considerably heterogeneous, with a wide range of motor, cognitive, and psychiatric symptoms [8]. The disease, which affects approximately 1 in 1000 individuals residing in western countries, is the most common cause of disability outside of traumatic injury in early adulthood [9].

In the general population, heavy alcohol consumption increases in the late teens, peaks around age 25 or 26, and then slowly decreases [10]. There is a similar pattern with drug use [6]. This is especially important when thinking about multiple sclerosis. MS is usually diagnosed between the ages of 20 and 40 [9], when the rate of substance use is at its highest. This is particularly problematic because alcohol and

☆ Source of support: There was no funding source, sponsor or grant for this research.
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http://dx.doi.org/10.1016/j.jns.2013.12.029

drug use may cause further neurologic damage to an already compromised central nervous system [11–14].

However, there is considerable variability in findings of substance use among individuals with MS. Several studies suggest that consumption of alcohol may be more common in individuals with multiple sclerosis [12,13,15] than in the general population; 13.6–22.8% in MS as compared to 9% in the general population (12-month prevalence) [11–14,16,17]. Others suggest the opposite and report that consumption decreases after diagnosis [18,19]. In terms of demographics, two studies (one of veterans with MS and one of community-dwelling individuals with MS) found that excessive alcohol use was more prevalent in individuals who were younger, employed, and in better physical health [12,13]. Conversely, a Canadian study found no significant differences in demographics between excessive and normal drinkers [14]. Similarly, in some studies mental health diagnoses such as anxiety and depression were reported as more prevalent in excessive drinkers [12,14], but this was not found in other studies [13].

The way alcohol use was assessed may provide an explanation for this lack of consistency. We know from studies in the general population that measures used to assess for hazardous drinking may not accurately assess abuse and dependence and vice versa [4]. The measure used to assess alcohol can impact the reported rate of consumption, associated demographics and make comparisons between study samples difficult. A few examples of survey measures used in MS studies include: select questions from the National Institute of Alcohol Abuse and Alcoholism [18], the National Health and Nutrition Examination Survey [18], the Alcohol Use Disorders Identification Test—Consumption Questions (AUDIT-C) [13], select questions from the Patient Health Questionnaire [12], and the Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders—Fourth Edition (SCID-IV) [14].

Like alcohol consumption, the study of illicit drug use among individuals with MS is limited and much of the research focuses on the use of marijuana for symptom relief. However, it has been suggested that individuals with multiple sclerosis who use drugs are more likely to screen positive for excessive alcohol use [12], are at higher risk for mental health disorders [14], and demonstrate slower processing speed than individuals with MS that do not use illicit drugs [20].

The data on alcohol and drug use in multiple sclerosis is limited. There is inconsistency in how substance use is assessed, rates of consumption, demographics and many available studies were done with populations that are not easily generalizable (e.g., United States Veterans). The main aim of this study was to enhance our knowledge of substance use in individuals with multiple sclerosis by examining the demographic (age, education, gender), disease-related (disease severity, time since diagnosis), and common psychosocial (pain, depression) correlates of alcohol and drug use utilizing several common screening instruments (e.g., CAGE, CAGE-AID, AUDIT-C) in an East Coast outpatient clinic MS sample.

2. Methods

2.1. Participants

A convenience sample of individuals with MS was recruited from the Multiple Sclerosis Center at Holy Name Medical Center in Teaneck, New Jersey. Inclusion criteria were [1]: a definite diagnosis of MS [2], ability to speak and read English [3], over the age of eighteen, and [4] capacity and willingness to sign the research consent form. Exclusion criteria included any physical (e.g., legal blindness or deafness) problem rendering individuals incapable of completing questionnaires. A total of 157 individuals were enrolled in the study.

2.2. Procedure

Research personnel and staff from the Multiple Sclerosis Center at Holy Name Medical Center completed recruitment. Individuals were asked to participate in the study when they arrived for an appointment at the MS Center. Upon consent, each participant was given a packet of questionnaires that they completed prior to, during, or after their office visit. The packet was collected prior to their departure from the clinic. The Albert Einstein College of Medicine Institutional Review Board for Human Subjects Research approved all procedures and consent forms.

2.3. Measures

2.3.1. Alcohol use

2.3.1.1. Alcohol Use Disorders Identification Test—Consumption (AUDIT-C). This three-item validated screen is used to assess the quantity and frequency of current alcohol use. It has been used to screen for active alcohol use disorders, but performs best when screening for hazardous drinking (≥16 drinks per week for men or ≥12 drinks per week for women). Scores range from 0 to 12. A recent US general population validation study of past-year drinkers examined how well the AUDIT-C performed in detecting hazardous drinking. For men, a cut-off score ≥4 yielded a sensitivity of 99.0 and specificity of 79.1 [21]. For women, a score of 3 or more yielded a sensitivity of 96.3 and specificity of 79.5 [21]. In a study of individuals with MS, Turner and colleagues [13] broke down the scoring into four categories: non-drinkers (0), low-level, non-clinical drinkers (1–3 for men and 1–2 for women), mild-moderate drinkers (4–7 for men and 3–7 for women), and severe alcohol misuse (8 or above for both men and women).

2.3.1.2. CAGE. This four-item questionnaire was developed to screen for alcohol abuse [22,23]. Scores range from 0 to 4. When used to screen for heavy drinking (score ≥ 2), the sensitivity and specificity of the CAGE ranged from 49 to 69% and 75 to 95%, respectively. When used to screen for alcohol abuse or dependence with a cutoff score of 2, the sensitivity ranged from 21 to 94% and specificity ranged from 77 to 97%. With a cutoff score of 1, studies report a sensitivity of 60–71% and specificity of 84–88% [4].

2.3.2. Drug use

2.3.2.1. CAGE—Adapted to Include Drugs (CAGE-AID). This four-item questionnaire is identical to the original CAGE for alcohol use except "drinking" has been replaced by "*drinking or drug use*" [7]. The CAGE-AID was validated in primary care. A score of one or more indicates a positive screen with a sensitivity of 0.79 and specificity of 0.77. A score of two or more yields a sensitivity of 0.7 and specificity of 0.85. However, this study wanted to separate alcohol and substance use, so we included only "*drug use*." Justification for adapting the CAGE for drug use only comes from substance use literature in traumatic brain injury, where researchers compared the drug adapted CAGE to the SCID. The drug adapted CAGE accurately classified 78% of drug users and yielded a sensitivity of 68% and specificity of 82% [24].

2.3.2.2. National Household Survey Drug Abuse Question (NHSDA). This single question, "*Have you used drugs or medication for nonmedical purposes (that is, for recreational use, using a drug that was not prescribed for you, using a drug in greater amounts, or more often than prescribed or using drugs to get high?)*" is answered dichotomously with either a yes or no response. This question was originally developed as part of the 1992 National Household Survey on Drug Abuse [25] and used by Bombardier and colleagues [12] with multiple sclerosis patients.

2.3.3. Depressive symptomology

2.3.3.1. Patient Health Questionnaire—9 item (PHQ-9). The PHQ-9 is the depression subscale from the Patient Health Questionnaire (PHQ). Each of the nine questions coincide with one of the nine criteria listed