



Co-occurring Attention Deficit Hyperactivity Disorder symptoms in adults affected by heroin dependence: Patients characteristics and treatment needs[☆]



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ABSTRACT

Attention Deficit Hyperactivity Disorder (ADHD) is a risk for substance use disorders. The aim of this study was to investigate the association between adult ADHD symptoms, opioid use disorder, life dysfunction and co-occurring psychiatric symptoms. 1057 heroin dependent patients on opioid substitution treatment participated in the survey. All patients were screened for adult ADHD symptoms using the Adult ADHD Self-Report Scale (ASRS-v1.1). 19.4% of the patients screened positive for concurrent adult ADHD symptoms status and heroin dependence. Education level was lower among patients with ADHD symptoms, but not significant with respect to non-ADHD patients. Patients with greater ADHD symptoms severity were less likely to be employed. A positive association was observed between ADHD symptoms status and psychiatric symptoms. Patients with ADHD symptoms status were more likely to be smokers. Patients on methadone had a higher rate of ADHD symptoms status compared to buprenorphine. Those individuals prescribed psychoactive drugs were more likely to have ADHD symptoms. In conclusion, high rate of ADHD symptoms was found among heroin dependent patients, particularly those affected by the most severe form of addiction. These individuals had higher rates of unemployment, other co-morbid mental health conditions, heavy tobacco smoking. Additional psychopharmacological interventions targeting ADHD symptoms, other than opioid substitution, is a public health need.

1. Introduction

Attention-deficit hyperactivity disorder (ADHD) is a developmental disorder that begins in childhood and persists into adulthood (Sullivan and Levin, 2001; Wender et al., 2001). Often, it goes undiagnosed and has been considered a serious risk factor for the development of

substance use disorders (SUD) (Wilens et al., 2011).

While there has been some controversy of whether conduct disorder (CD) in childhood and adolescence is a critical comorbidity for SUD to occur, have ADHD alone is a risk for SUD in adults (Biederman et al., 1995). However, the combination of ADHD with CD has been reported to increase this risk, possibly through increased vulnerability to further

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psychiatric comorbidity (Carpentier, 2014).

Evidence suggests that the frontal cortex is involved in reward/emotional processing, attention gating, behavioral inhibition, with a dysfunction of these regions influencing a common behavioral pattern with impulsiveness, impaired attention and drug use susceptibility (Van Dongen et al., 2015; Perry et al., 2011; Wilens et al., 1998). To this purpose, impaired reward processing in the prefrontal cortex has been found to be associated with persistent attention deficit hyperactivity disorder in the adult (Wetterling et al., 2015) and seems also to underlie substance use disorders vulnerability (Park et al., 2010; Müller-Oehring et al., 2013; Lee et al., 2013; Tanabe et al., 2007). Accordingly, frontal dysfunctions of impulse control, with disturbed activity mainly in ventrolateral and medial prefrontal regions, have been reported in both ADHD and SUD patients (Sebastian et al., 2014).

Considering these neurobiological evidence, not surprisingly, adult ADHD has been found to be over-represented in SUD populations and, subject to the sampling methodology applied, prevalence estimates range from 14% to 44% (McAweeney et al., 2010; Van de Glind et al., 2014), which is considerably higher than the 2.5–4% observed in the community (Kessler et al., 2006). Accordingly, persistent ADHD and a history of CD have been reported highly prevalent among patients with SUD. Patients with adult ADHD among drug dependent individuals had significantly higher problem severity scores, lower quality of life scores, more comorbid SUDs and psychiatric disorders (Carpentier et al., 2011).

Increased drug dependence complexity and chronicity have been evidenced in treatment-seeking SUD patients who screen positively for ADHD (Young et al., 2015).

Comorbid ADHD and SUD appear to exacerbate a number of maladaptive SUD outcomes such as earlier drug use initiation, increased psychiatric comorbidities, hospitalizations, suicide attempts, and HIV-risk behaviours (Arias et al., 2008; Tamm et al., 2013), thus making the treatment and management of SUD in clinical settings more challenging and less effective (Carroll et al., 1993; Levin et al., 2004). Poor treatment adherence, slower SUD remission, and greater risk of relapse have been repeatedly demonstrated in these patients (Tang et al., 2007).

Patients with ADHD symptoms on methadone maintenance therapy (MMT) seem to be characterized by greater addiction severity and more comorbid psychopathology, only partly explained by the influence of a coexisting CD (Carpentier et al., 2014; King et al., 1999). In these opiate dependent patients, the role of ADHD symptoms in adulthood, as a risk condition for heroin dependence and as a factor aggravating addictive behavior itself, is still uncertain and needs to be better investigated.

To our knowledge, few surveys have been conducted, due to the difficulty in studying heroin dependent patients, on this specific comorbidity. The evidence available about ADHD symptoms persisting in the adult among opiate dependent patients are very limited (Daigre et al., 2013), particularly in relation to the potential link with symptoms of other co-occurring mental health disorders and the interference of opioid medications.

For this purpose, the aims of the present study were to: (i) estimate the prevalence of adult ADHD symptoms among Italian patients affected by opioid use disorders on opioid substitution programs; (ii) assess the association between ADHD symptoms and age, gender, education/employment and family relations; and (iii) explore the possible association of adult ADHD symptoms with co-occurring nicotine dependence and the symptoms of other psychiatric disorders, in need of pharmacological interventions other than opioid agonists substitution.

The hypothesis of the study was that having ADHD symptoms among patients enrolled in a methadone maintenance program would be associated with greater vulnerability for more serious opioid use disorder severity, with unemployment, social disintegration and higher rate of comorbid mental health disorders symptoms.

In this perspective, we wanted also to explore the relation between ADHD symptoms and the type of opioid-agonists utilized in the treatment program. On one side, we hypothesized that the most problematic opioid use disordered patients, affected by ADHD symptoms persisting in adulthood, would more likely to be prescribed methadone (a full agonist on opioid receptors) rather than buprenorphine (a partial agonist), and would more frequently require the prescription of several psychoactive medications in addition to substitution treatment, when compared with opioid use disordered patients not affected by ADHD symptoms status. On the other, we wanted to investigate whether or not specific opioid medications (methadone or buprenorphine) were able to interfere with the intensity of ADHD symptoms.

For these reasons, 1057 heroin dependent patients on opioid substitution treatment were administered the Adult ADHD Self-Report Scale (ASRS-v1.1) to measure ADHD symptoms, and the Symptoms Checklist 90 (SCL 90) to evaluate co-occurring psychiatric symptoms. Demographic and socio-economic data, nicotine use, information concerning prescribed medications were self-reported in response to a questionnaire and confirmed by clinical records.

2. Methods

The study was conducted in 20 Addiction Treatment Outpatients Centers (Bassano, Bologna, Bolzano, Dolo, Este, Gemona, Gravellona, Legnago, Mantova, Mestre, Mirano, Monselice, Novi L., Oderzo, Pordenone, Rovigo, Treviso, Valdagno, Villafranca, Zevio) of the Italian public health system. The interventions, policies and procedures in each Center were similar and the accessibility threshold was the same across all centers.

Addiction Services in Italy provide outpatient treatment programs with a variety of therapeutic and rehabilitative strategies: methadone, buprenorphine and oral naltrexone are administered in association with possible psychosocial interventions, such as psychotherapy, family therapy, group therapy, social support and medications for psychiatric co-morbidity. The 20 centers selected for the present study did not differ in the psychosocial treatment protocols associated with methadone, staff dimensions or admission criteria. The majority of patients in the Italian Addiction Services are dependent on heroin, although interventions are also available for patients demonstrating dependence on cannabis, cocaine and alcohol. Patients are routinely evaluated using a self-report and observer-rated questionnaire focused on addiction history, and each patient receives a psychiatric diagnostic screening. No exclusion criteria are applied to patients in the public health system. Patients who fail to respond to interventions such as methadone, and continue to inject heroin, are not terminated by these centers. All the patients received also psychosocial treatment with elements of cognitive behavioral treatment.

Addiction Treatment Services went recently through an accreditation process with appropriate monitoring process and certification of quality standards: reference to guidelines and training of professionals at the national/regional level guaranteed that methadone and buprenorphine are prescribed following the same indications and rules.

A cross-sectional survey was administered to a large sample of patients receiving methadone or buprenorphine maintenance treatment for heroin dependence between July 1st, 2014 and December 31st, 2014.

2.1. Subjects

The sample included 1057 patients (797 males and 260 females) attending drug recovery programs in treatment centers for clinically-diagnosed opioid use disorders (DSM-5). The patients were receiving either methadone maintenance (786) or buprenorphine (241) maintenance in combination with psychosocial treatment, while a small number (30) was not receiving any maintenance. They were stabilized

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