



Attention deficit hyperactivity disorder as a neglected psychiatric disease in prison: Call for identification and treatment

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ABSTRACT

Mis-diagnosis of attention deficit hyperactivity disorder (ADHD) is an important public health concern because the disease is treatable, yet can have a disastrous effect on the life of those affected. ADHD is associated with delinquency, criminality, and recidivism; and thus, people living in detention are especially at risk of having ADHD. This study investigated prevalence rates of ADHD diagnosis and treatment in prison. Data were collected in a Swiss prison (n=158). Medical files were screened for ADHD clinical diagnosis and treatment, and participants completed five items assessing ADHD symptomatology (ASRS-5). We computed prevalence rates with 95% confidence intervals (CI). Overall, 1.9% [95% CI: 1.1%–5.8%] of the participants had a clinical diagnosis of ADHD in medical files. Nobody received ADHD treatment. For the self-reported questionnaire, 12.9% [95% CI: 8.5%–19.2%] of the participants met the cut-off and were screened as potentially having ADHD. This study suggested that ADHD was under-diagnosed and under-treated in prison, with a lower prevalence rate according to the medical files of the participants in comparison with self-reports and with the worldwide meta-analytic prevalence rate of 26.2%. ADHD should receive more attention in order to promote health equity between incarcerated and general populations, to reduce health (care) disparities, and to enhance rehabilitation following incarceration.

1. Background

Attention deficit hyperactivity disorder (ADHD) is a neurodevelopmental disorder that has been an increasing concern over the past decades. ADHD is characterized by impaired attention, hyperactive behaviors, and/or poor impulse control. It usually starts in childhood or early adolescence and persists into adulthood among 40%–60% of cases (Ramos-Quiroga, Nasillo, Fernández-Aranda, Fernández-Arana, & Casas, 2014).

ADHD is associated with several long-lasting consequences for functioning, such as impaired educational and vocational achievement (Franke et al., 2018; Ginsberg, Beusterien, Amos, Jousselin, & Asherson, 2014), and health, for example psychiatric comorbidities, risky

behaviors, and lack of health care access and continuity (Asherson, 2016; Ginsberg, Beusterien, et al., 2014; Graziano et al., 2015; Shaw et al., 2012). In addition, ADHD is associated with an increased risk of delinquency, criminality, and incarceration (Mohr-Jensen & Steinhilber, 2016; Philipp-Wiegmann et al., 2018; Young, Moss, Sedgwick, Fridman, & Hodgkins, 2015). ADHD is, however, a treatable condition. Among adults, a pharmacological treatment is highly effective, with psychostimulant as the first-line treatment (National Guideline Centre, 2018). Psychotherapy is less effective (Lopez et al., 2018) and evidence is scarce for psychoeducation (Vaag, Lara-Cabrera, Hjemdal, Gjervan, & Torgersen, 2019). Furthermore, ADHD is often mis-diagnosed. It may be over-diagnosed in children (Layton, Barnett, Hicks, & Jena, 2018), but adults are likely to be under-diagnosed and thus under-treated

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(Ginsberg, Quintero, Anand, Casillas, & Upadhyaya, 2014).

ADHD is usually neglected among incarcerated populations (Young, Gudjonsson, et al., 2018; Young et al., 2014), although the prevalence rate of this disorder is very high in this population (Baggio, Fructuoso, et al., 2018). Untreated ADHD is likely to lead to poor outcomes, such as maladjustment to prison life and recidivism (Berryessa, 2017; González, Gudjonsson, Wells, & Young, 2016; Gordon, Williams, & Donnelly, 2012; Young et al., 2009). Some studies have shown that ADHD treatment is associated with a reduced recidivism rate, especially for violent offenses (Chang, Lichtenstein, Långström, Larsson, & Fazel, 2016; Ginsberg, Hirvikoski, Grann, & Lindefors, 2012). The treatment of ADHD in prison has also yielded promising results on other outcomes as well (Ginsberg & Lindefors, 2012; Jillani, Patel, Trestman, & Kamath, 2016; Konstenius et al., 2014; Young et al., 2013). Therefore, correctly identifying and treating ADHD should be an important public health aim in prison (Scott, Gignac, Kronfli, Ocaná, & Lorberg, 2016; Tran et al., 2018; Young et al., 2016).

To our knowledge, no study has provided empirical evidence that ADHD is neglected and under-diagnosed in prison. Several studies estimated the prevalence rate of ADHD (Baggio, Fructuoso, et al., 2018), but information on diagnoses available in the medical files and access to treatment while detained is lacking. Our study investigated whether 1) the self-reported prevalence rate of ADHD differed from the clinical diagnoses available in the patients' medical files, and 2) patients were treated or not for ADHD in a Swiss prison.

2. Methods

2.1. Participants and procedures

We used data collected from the largest pre-trial prison in Switzerland, located in Geneva. This prison has a capacity of 398 (95% males). Data were collected in 2020 in a larger study focusing on informed consent of detained people. The inclusion criterion was the ability to provide informed consent.

Detained men were invited to participate in the study in the medical ward of the prison. Among 228 invited detained persons, 193 participated. A total of 3 participants dropped out before study completion and 32 participants were excluded because they did not consent for the reuse of their health data (main objective of the larger study), which left a total of 158 participants (overall response rate: 70.9%). Research assistants delivered the self-reported questionnaire in face-to-face sessions and collected information in the medical files. The questionnaire was available in ten languages (Albanian, Arabic, English, French, Georgian, German, Italian, Portuguese, Romanian, Russian, and Spanish) and research assistants had written texts to invite participants speaking foreign languages.

2.2. Measures

ADHD diagnosis. ADHD diagnoses were extracted from clinical

patient records. These diagnoses were made by psychiatrists/psychologists trained for ADHD diagnoses during the detention period according to the ICD-10 (WHO, 2010).

ADHD medication. The prescription of an ADHD medication during detention was also extracted from clinical patient records.

Self-reported ADHD: We used the five items from the Adult ADHD Self-Report Screening Scale according to the DSM-5 definition (ASRS-5) to assess ADHD (Baggio et al., 2021; Ustun et al., 2017). The ASRS-5 score ranges between 0 and 24. This screener shows good psychometric properties to measure ADHD, with a cut-off score of 13 or above indicating a positive diagnosis (Baggio et al., 2021).

Socio-demographic and clinical factors. Socio-demographics included age, nationality (European countries vs. other), and level of education (primary/secondary vs. tertiary level of education). Presence of any psychiatric condition (formally diagnosed diseases and presence of severe symptoms) was extracted from medical files.

2.3. Statistical analyses

We first computed descriptive statistics for the whole sample and for groups with/without ADHD. We estimated the prevalence of ADHD according to the clinical diagnosis and according to the self-report, along with 95% confidence intervals (95% CI), which allowed us to test whether prevalences were significantly different from one another.

3. Results

The mean age of participants was 35.1 ± 12.0 years. They mostly came from non-European countries (60.3%) and had a low level of education (tertiary level of education: 31.7%). A total of 55.1% had at least one psychiatric condition documented in medical files. Descriptive statistics are reported in Table 1.

Overall, 1.9% had a clinical diagnosis of ADHD (95% CI: 1.1%–5.8%) in medical files. A total of 12.9% of the participants were screened as potentially having ADHD using the ASRS-5 (95% CI: 8.5%–19.2%). No participant had a treatment for ADHD while detained.

4. Discussion

4.1. Main discussion

This study investigated whether ADHD was under-diagnosed, using data from one prison located in Switzerland. Clinical diagnoses lead to a prevalence rate of ADHD of 1.9%. This was far below the worldwide meta-analytic prevalence rate of 26.2% identified in a previous meta-analysis (Baggio, Fructuoso, et al., 2018). The self-reported assessment of ADHD symptoms showed that 12.9% of the participants were screened as potentially having ADHD. Overall, ADHD seemed under-diagnosed and undertreated among detained people, as suggested previously without empirical support using clinical diagnoses available in prison medical files (Young, González, et al., 2018; Young, Gudjonsson,

Table 1
Descriptive statistics.

	Overall	ADHD diagnosis		ADHD self-report ^c	
	n=158 (100%)	No (n=155, 98.1%)	Yes (n=3, 1.9%)	No (n=135, 87.1%)	Yes (n=20, 12.9%)
Age ^a	35.1 (12.0)	35.4 (12.0)	24.0 (5.3)	36.1 (12.4)	29.5 (7.8)
Tertiary level of education ^b	31.7 (50)	32.3 (50)	0.0 (0)	34.8 (47)	15.0 (3)
Nationality other than Europe ^b	60.3 (94)	39.9 (61)	33.3 (1)	38.4 (51)	45.0 (9)
Psychiatric condition ^b	55.1 (87)	54.2 (84)	100 (3)	53.3 (72)	70.6 (14)
Total ASRS (0–24) ^{a,c}	7.8 (4.3)	7.7 (4.2)	13.7 (3.2)	6.7 (3.3)	15.3 (1.8)

ADHD: attention deficit hyperactivity disorder; ASRS: Adult ADHD Self-Report Screening Scale according to the DSM-5 definition.

^a Means and standard deviations are reported.

^b Percentages and n are reported.

^c n=3 missing values for the ASRS.

et al., 2018; Young et al., 2014). As ADHD treatment leads to improved outcomes, such as reduced recidivism (Chang et al., 2016; Ginsberg et al., 2012), all detained persons with ADHD should benefit from timely and appropriate treatment. This finding raised the question of lack of access to timely and appropriate ADHD treatment.

4.2. Limitations

This study has some limitations. First, the clinical charts used included diagnoses based on ICD-10. In this version of the ICD, ADHD may represent more severe cases of the disorder compared to the DSM definitions (Lee et al., 2008). Further studies should use DSM-5 (APA, 2013) or ICD-11 criteria (Reed et al., 2019), which are likely to provide higher prevalence rates of ADHD (Ginsberg, Beusterien, et al., 2014; van de Glind et al., 2014). Second, we relied on a self-report questionnaire to provide the “real” picture of ADHD in prison, which may not be a reliable way to assess ADHD, even if the ASRS-5 has convincing psychometric properties. For example, the ASRS is less reliable in the presence of some comorbid disorders, with an increased risk of classifying individuals as having ADHD in the absence of the disorder (Baggio et al., 2021). However, a previous meta-analysis on the prevalence of ADHD in prison populations showed no significant differences in prevalence according to diagnostic interviews and self-reports in adulthood (Baggio, Fructuoso, et al., 2018). Future studies should provide more reliable assessments of ADHD. Besides, the prevalence rate of ADHD diagnosis was also significantly lower than the worldwide meta-analytic prevalence, which indicated that ADHD was probably under-diagnosed (Baggio, Fructuoso, et al., 2018).

4.3. Conclusion

For all these reasons, we call for an increased awareness of ADHD in prison, thus avoiding under-diagnosis and increase appropriate care for detained persons with this disorder. ADHD is a treatable condition and there is no reason why it should not be treated in prison. This question should form the focus of future prison research in order to promote health equity between incarcerated and general populations, to reduce health (care) disparities, and to enhance rehabilitation following incarceration. Further studies should also address the important question of continuity of care (Moscato, Jovanovic, & Rojnic, 2015; Treuer et al., 2017), which is an issue for the transition between child and adult services (Baggio, Studer, et al., 2018), but also between prison care and health care following release.

Ethics approval and consent to participate

The Geneva’s cantonal ethics committee approved the study protocol (no. 2019-01797). Participants provided informed consent to participate. Informed consent was obtained from the legally authorized representatives/next of kin for involving detained persons. All methods were performed in accordance with the relevant guidelines and regulations (Declaration of Helsinki).

Consent for publication

Not applicable.

Availability of data and materials

The dataset is available from the corresponding author on reasonable request.

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Authors’ contributions

All authors contributed to the study conception. SB, PH, and LG designed the study. SB and LG collected data. SB performed statistical analyses. All authors contributed to data interpretation. SB drafted the manuscript. PH, NP, AB, RS, HW, ML, and LG substantively revised it. All authors approved the submitted version of the manuscript and agreed both to be personally accountable for the author’s own contributions and to ensure that questions related to the accuracy or integrity of any part of the work.

Declaration of competing interest

Michael Liebrezn serves as the Editor-in-Chief and Stéphanie Baggio serves as an Associate Editor, neither had involvement in the peer review of this article. Responsibility for peer review was delegated to Adegbayegba Ogunwale. No other conflict of interest exists.

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