

ATTENTION DEFICIT HYPERACTIVITY DISORDER IN IMPRISONED INDIVIDUALS - A REVIEW

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SUMMARY

Attention deficit hyperactivity disorder (ADHD) is one of the most prevalent psychiatric disorders with lifelong impact of the affected individuals. It is usually co-morbid with other psychiatric disorders. This paper aims to review current knowledge about ADHD in imprisoned individuals. The rate of ADHD in prisoners ranges from 10% to 70% and it has been suggested that ADHD, even without co-morbidity with conduct disorder, is a risk factor for imprisonment. Based on these findings, it may be wise to include the assessment of ADHD symptoms in all adult and adolescent prisoners. This is while available psychiatric resources for the adequate management of ADHD in prisoners are limited. Most of current knowledge on the topic comes from western countries. There is an urgent need for studies that will explore the effect of other cultures on the interactions between ADHD and imprisonment, especially in developing countries worldwide. At this point, ADHD seems to be an ignored research area in developing countries.

Key words: attention deficit hyperactivity disorder - prisoners

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INTRODUCTION

Attention deficit hyperactivity disorder (ADHD) is one of the most common psychiatric disorders with childhood onset and chronic course associated with high dysfunction throughout life. It can be found in approximately 1.2%-7.3% of the adult population (Fayyad et al. 2007). ADHD is 3 to 4 times more frequent in boys than in girls (Ghanizadeh 2008; Robison et al. 2008); while in adults, this ratio is about 1.5 (Rasmussen & Levander 2009). It usually co-occurs with psychiatry disorders such as conduct disorder (Ghanizadeh et al. 2008), substance abuse and dependence (Barkley, Fischer et al. 2004), learning disabilities (Mayes et al. 2000), and borderline personality disorder (Philipsen et al. 2008).

An interesting study was performed by Mannuzza and colleagues. They studied 207 white boys aged 6-12 years with ADHD and without conduct disorder assessed them at ages 18 and 25 years, and again at age 38. Individuals with ADHD had been arrested more than the control group (47% vs. 24%), convicted (42% vs. 14%), and imprisoned (15% vs. 1%) (Mannuzza et al. 2008).

Meanwhile, unfortunately many parents (Ghanizadeh 2007), general practitioners, teachers (Ghanizadeh et al. 2006; Ghanizadeh et al. 2009), and medical services providers do not have enough knowledge and good attitude towards children and

adolescents with ADHD which can even worsen their outcome. Furthermore, these children's coping strategies for anger management are poorer than healthy counterparts. Their weaker anger management may make them more prone to some consequences of imprisonment. Moreover, children with ADHD have more difficulties in their relationship with their parents. Therefore, it may impair their family support during and after imprisonment. These factors may explain lower quality of life of the children and adolescents with ADHD (Jafari et al. 2011). As already mentioned, children with ADHD are at risk for poor outcome in later ages, criminal activity in adulthood being one of them. This is the reason why it is emphasized that interventional programs should be conducted for childhood ADHD (Fletcher & Wolfe 2009).

In this paper we aim at reviewing current knowledge about association between ADHD and being imprisoned. Secondly, we would like to point at limitations of previously used methodology, and suggest new strategies for the future studies. The meanings of some technical terms used in this review are the following

The detention of a person in jail to punish him/her for a crime is called Incarceration (Karnik et al. 2010). Imprison means keeping a person in prison. Detention or imprisonment means lawfully keeping a person by removing his/her freedom of liberty (Putnins 2005). Detainee means a person held in custody (Sevecke et al. 2009).

ADHD IN IMPRISONED CHILDREN AND ADOLESCENTS

The casual relationship between ADHD and criminal activities is not well understood (Eme 2009; Westmoreland, Gunter et al. 2009; Young, Chesney et al. 2009). It has been suggested that there is an underlying biological vulnerability such as variations of the DRD3 gene that plays a role in impulsivity and ADHD aggressive behaviors (Retz, Rosler et al. 2003). The rate of ADHD in prisoners ranges from 10% to 70% (Table 1). It has been suggested that ADHD, even without co-morbidity with conduct disorder, is a risk factor for imprisonment (Sevecke, Kosson et al. 2009). The rate of ADHD among prisoners is higher than the general population (45 % vs. 21.7 %) (Rosler, Retz et al. 2009) especially in adults younger than 25 years (Rosler, Retz et al. 2004).

Prisoners with antisocial personality disorder co-morbid with ADHD symptoms have earlier onset and increased rate of psychopathy than those without ADHD symptoms (Chang, Chen et al. 2007; Semiz, Basoglu et al. 2008). Adult criminals with psychopathy diagnoses have a higher prevalence of histories of ADHD than that of those without psychopathy (Johansson, Kerr et al. 2005).

There are three possible explanations for the association of ADHD and offender behaviors in imprisoned individuals. The first hypothesis is that ADHD may cause offender behaviors leading to being imprisoned. Secondly, this association may be related to the high rate of conduct disorder in individuals with ADHD. Finally, both ADHD and conduct disorder increase the risk of offending behaviors (Sevecke, Kosson et al. 2009). These hypotheses have been addressed by the study of Sevecke and colleagues (Sevecke, Kosson et al. 2009). They found that the influence of ADHD on men was mainly due to the overlap between ADHD and conduct disorder. However, ADHD seems to independently cause psychopathy in females (Sevecke, Kosson et al. 2009).

Interestingly, there seems to be a gender difference in prisoners with ADHD. It had been reported that the rate of ADHD was 10% and 45% in imprisoned women and men, respectively (Rosler, Retz et al. 2009). Furthermore, female offenders with ADHD are convicted at younger age and their imprisonment period is longer than those without ADHD (Rosler, Retz et al. 2009). The rate of co-morbid axis-I disorders is higher in females with ADHD than their counterparts without ADHD. However, the prevalence of psychotic, affective, anxiety, somatization, and posttraumatic disorders is not different between those with and without ADHD (Rosler, Retz et al. 2009). On the contrary, substance use disorders, borderline personality disorder, and eating disorders are more common in female ADHD-prisoners than male prisoners with

ADHD (Rosler, Retz et al. 2009). There is a high frequency of unemployment, homelessness, the lifetime imprisonment of more than 90 days in imprisoned women (Hennessey, Stein et al. 2009).

IMPLICATION FOR ASSESSMENT AND TREATMENT OF PRISONERS

ADHD seems to increase the rate of co-morbidity for other disorders such as antisocial personality disorder and substance use disorder (Einarsson, Sigurdsson et al. 2009), mood (Rosler, Retz et al. 2009), anxiety (Rosler, Retz et al. 2009), psychotic (Rosler, Retz et al. 2009), and somatoform disorders (Retz, Retz-Junginger et al. 2004; Rosler, Retz et al. 2009; Westmoreland, Gunter et al. 2009) in prisoners. Moreover, the risk for suicide is higher in these individuals (Westmoreland, Gunter et al. 2009).

The long-term consequences of childhood ADHD are not well studied (Fletcher and Wolfe 2009). It has been well proved that ADHD in childhood increases the rate of engaging in criminal activities (Fletcher and Wolfe 2009). The symptoms of ADHD in imprisoned youth also predict future substance use (Putnins 2006). Prisoners with a substance use disorder have significantly higher ADHD symptom scores than those without such disorder (Matsumoto, Yamaguchi et al. 2005). Therefore, it may be expected that studying ADHD in childhood may lead to effective interventions that can save resources by decreasing the rate of substance use and criminal activities (Fletcher and Wolfe 2009). Since many children and adolescents with ADHD are highly impulsive, ADHD plays an important role in re-arrest of the subjects released from the prison (Eme 2009). Moreover, addicted young male prisoners with ADHD have a higher degree of psychopathology including externalizing and internalizing behavior and social problems in compare to that of those without ADHD (Retz, Retz-Junginger et al. 2007).

In addition, there are many challenges and controversies for the treatment of ADHD in prisoners (Burns 2009; Ghanizadeh and Akhondzadeh 2009). While some authors point out limitation of the prescribed stimulants for prisoners, others argue that limited prescription of stimulants may be inevitable until safer medications and controlled, highly supervised settings become available. Furthermore, male sex offenders with higher scores on ADHD testing less likely complete the treatment than that of those with low scores (Langevin 2006). This is another obstacle for their treatment. Lastly, ADHD in imprisoned juvenile boys, but not in girls, is a risk factor for suicidal behavior (Plattner, The et al. 2007). Also, it is a risk factor for suicidal behavior in young individuals in detention centers being related to impulsivity (Putnins 2005).

Table 1. ADHD in prisoners – findings from the literature

Sample characteristics	Instrument and assessment	Results	Reference
319 imprisoned men and women	Mini International Neuropsychiatric Interview and Medical Outcome Survey Health Survey	ADHD prevalence: 21.3%	(Westmoreland, Gunter et al. 2009)
110 adult female prisoners	SCID-I and -II interviews and standardized German instruments for the assessment of ADHD in adults	ADHD lifetime prevalence: 24.5% ADHD current prevalence: 10% This prevalence decreases with aging	(Rosler, Retz et al. 2009)
192 female from the Department of Corrections	the Wender Utah Rating Scale	childhood ADHD: 46%	(Hennessey, Stein et al. 2009)
90 male prisoners	Mini International Neuropsychiatric Interview (MINI), Standardized Assessment of Personality-Abbreviated Scale (SAPAS), Wender-Utah Rating Scale, DSM-IV Checklist, assessed within 10 days of admission	childhood ADHD: 50% current ADHD symptoms: 60%	(Einarsson, Sigurdsson et al. 2009)
3,962 prisoners	DSM-IV-TR criteria	ADHD: 16%	(Coolidge, Segal et al. 2009)
105 adult male offenders	Wender Utah Rating Scale (WURS) and Conners Adult ADHD Rating Scale	65% of those with antisocial personality disorder met criteria for ADHD	(Semiz, Basoglu et al. 2008)
320 randomly selected men and women	Mini-International Neuropsychiatric Interview-Plus	ADHD: 22.6%	(Gunter, Arndt et al. 2008)
90 male prisoners	Wender Utah Rating Scale, current adult ADHD symptoms by the DSM-IV Checklist	childhood ADHD: 50% current ADHD symptoms: 60%	(Gudjonsson, Sigurdsson et al. 2008)
129 young male prison inmates	DSM-IV criteria	Any drug abuse or dependence: 67.4%. 28.8 % of these participants had ADHD combined type, other 52.1% had ADHD of residual type	(Retz, Retz-Junginger et al. 2007) (a non English language small study)
204 imprisoned boys	Diagnostic Interview Schedule for Children (DISC)	ADHD: 8% (95% CI: 5-13%)	(Vreugdenhil, Doreleijers et al. 2004)
129 prison male inmates and 54 healthy male control subjects	Wender Utah Rating Scale (WURS), ADHD DSM-IV and ICD-10 research criteria	ADHD according to DSM-IV: 45%, ICD-10 research criteria: 21.7%	(Rosler, Retz et al. 2004)
129 young adult prisoners	DSM-IV and ICD-10 criteria	28 out of 129 met the diagnostic criteria of ADHD, 64 individuals met childhood ADHD symptoms	(Retz, Retz-Junginger et al. 2004)
67 offenders	The Mini International Neuropsychiatric Interview (MINI) was administered by trained correctional personnel	ADHD: 10%	(Black, Arndt et al. 2004)
120 consecutively evaluated outpatient males with paraphilias	DSM-IV- criteria	ADHD: 38% ADHD-combined subtype was associated with paraphilias	(Kafka and Hennen 2002)
98 imprisoned adolescents	Test of Variables of Attention (TOVA)	ADHD: 42.4%	(Chae, Jung et al. 2001)
102 inmates	interviewed	ADHD: 25.5%	(Eyestone & Howell 1994)
42 imprisoned males	Diagnostic criterion	12 out of 42 met ADHD criteria	(Forehand, Wierson et al. 1991)
50 female prison inmates	questionnaire based on the DSM-IV criteria	ADHD symptoms: 50%	(Edvinsson, Bingefors et al. 2010)
100 imprisoned boys, age 12 -19 years	Face-to-face interviews based on DSM-IV criteria	ADHD current prevalence: 33% *Sub-syndromal ADHD current prevalence: 27% ADHD lifetime prevalence: 72%	(Ghanizadeh, Nouri et al. Under Press)

LIMITATIONS OF ALREADY CONDUCTED STUDIES

The qualitative methodology for studying ADHD and criminal behaviors is rarely used (Young, Chesney et al. 2009). Many studies are retrospective (Gustavson, Stahlberg et al. 2007, Fletcher & Wolfe 2009) with low sample sizes especially for female prisoners (Forehand et al. 1991, Black et al. 2004, Roe-Sepowitz & Krysik 2008). There are many different confounding factors that should be borne in mind in the future studies in this population. For example, the role of treatment of ADHD on decreasing the criminal activity needs to be assessed.

Many studies rely on self-reports (Edvinsson, Bingefors et al. 2010) or interview with prisoners. However, it has been suggested that young prisoners are not reliable enough to report ADHD symptoms; thus, collateral information collection, parental interview (Colins, Vermeiren et al. 2008), and objective assessment (Asbjornsen, Jones et al. 2010) should be included. Sometimes, interviews are conducted by correctional personnel (Black, Arndt et al. 2004) and there are not definitive diagnostic instruments. Another problem is that standardized diagnostic instrument for validation of adult ADHD is not available (Kessler, Adler et al. 2006).

Prisoner offenders have not been studied, as most studies include referred offenders in prisons, but it is important to emphasize that non-prisoner offender groups can provide important knowledge about reasons for referral to prison (Andershed, Kerr et al. 2002). Maybe these reasons or processes can be prevented. The intellectual ability of the offenders with ADHD is rarely evaluated in assessments, although it has been shown that offender adolescents with ADHD have lower IQ scores than controls (Chae, Jung et al. 2001). Learning disorders are very common in individuals with ADHD which is another point rarely addressed in previously conducted studies. Oppositional defiant disorder is another very common co-morbid disorder (Ghanizadeh, Mohammadi et al. 2008) in ADHD that is usually ignored in the previous studies (Mannuzza, Klein et al. 2008).

SUGGESTIONS FOR THE FUTURE STUDIES

Lack of enough evidence regarding the management of prisoner adolescents with ADHD suggests that more resources for psychiatric management of individuals with ADHD should be provided in the prisons. Most of the studies come from western countries; therefore, conducting future studies in the countries with other cultures may help understand the interaction between ADHD and the culture in the prisoners. Moreover, it is not clear whether ADHD is associated with the type of the offense or the reason for imprisonment. Race/ethnicity and developmentally proper interference

need to be investigated in the future studies (Karnik, Soller et al. 2010). Future studies should not just rely on self-reported questionnaires, but face to face interviews using semi-structural interviews such as (Farsi version of) Kiddie Schedule for Affective Disorders and Schizophrenia (K-SADS) (Kaufman, Birmaher et al. 1997; Ghanizadeh, Mohammadi et al. 2006) and gathering information from other resources are also recommended. K-SADS is a semi-structural clinical interview for screening and assessment of psychiatric disorders in children and adolescents. Different psychiatric disorders such major depression, bipolar disorders, schizophrenia, anxiety disorders, ADHD, ODD, and conduct disorders can be assessed using K-SADS. Considering the high rate of ADHD in the community and its serious consequences, it is worth mentioning that ADHD is not well studied not only in the community but also in the adolescent prisoners in Asian countries.

CONCLUSION

Evidences show that ADHD alone and without comorbidity with conduct disorder in adolescence significantly increases criminal behaviors and substance use disorders in the later ages. All adult or adolescent prisoners should be screened for ADHD and ADHD assessment needs to be a part of their management protocols. Prisoners with ADHD need more mental health service cares than those without that. They need a more structured and low-populated environment in the prison. Also, the authorities of the prison should be educated about ADHD. The ADHD-prisoners' impulsive behaviors and hyperactivity need proper pharmacological and behavioral interventions. The assessment and management should include both ADHD diagnosis as a category and ADHD symptoms. Treatment of them may improve their relationship with other prisoners. Moreover, ADHD treatment may prevent occurring of other psychiatric disorders and legal problems. Also, because ADHD is associated with other problems such as addiction, dissociative problems, and positive family history of drug abuse in siblings, these programs should include a wide range of items such as advocating for the individual needs of the clients and their families. The risk of misdiagnosing ADHD and other problems should be considered. Available psychiatric resources for the management of ADHD in the prisoners are limited.

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Conflict of Interest

There was no conflict of interest to be declared.

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