MSc in Clinical Psychology

Adults Referred to the ADHD Clinic in Iceland: Clinical Characteristics

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Foreword and acknowledgements

This research project concludes my master study in Clinical Psychology at Reykjavik University. The project took place over three semesters, from January 2016 to May 2017. The first step was constructing the project, forming hypotheses and obtaining permissions from the National Bioethics Committee, the Chief Medical Executive and the Medical Director of Mental Health Outpatient Services. In addition, the draft of a theoretical background was written and handed in to supervisors. After receiving the necessary permissions, the draft of the method chapter was written. The next step was obtaining data from medical records of participants referred to the ADHD clinic at Landspitali-The National Hospital in Iceland from January 2013 to December 2015. The SPSS statistics software was used for data analysis. The final step of this project was writing this article and presenting the results for classmates, supervisors and teachers at Reykjavik University. This project is not a part of another study.

The aim of this study was to explore the clinical characteristics of adults referred to the ADHD clinic at Landspitali over a two year period. A better understanding of ADHD symptoms and their impact on multiple areas of functioning can improve diagnosis and treatment of adults with ADHD in Iceland and elsewhere.

I would like to express my gratitude to Landspitali for providing access to the necessary data. I also want to thank members of the ADHD clinic for their interest in the study, their support when needed. Special thanks to my supervisors Sigurlín Hrund Kjartansdóttir, Jón Friðrik Sigurðsson and Páll Magnússon, for their guidance throughout the research and giving me constructive feedback every step of the way. I greatly appreciate the time and the support you have given me. Furthermore, I would like to thank my sister and my parents for their endless support and motivation in my studies and life. I also want to thank my friends for their help and always keeping me on the right track throughout my studies.

Abstract

Objective: To explore the characteristics of adults referred to the ADHD clinic at Landspitali-The National University Hospital of Iceland from 2013 to 2015 (N=531) and compare those who did not meet screening criteria (N=136), those who did not meet diagnostic criteria for ADHD (N=90) and those who met diagnostic criteria (N=305). **Method:** Data was obtained from the participants' medical files which included scores on the ADHD Rating Scale, background information, information from the MINI diagnostic interview and a number of psychological scales (the Depression Anxiety Stress Scales, the Clinical Outcome of Routine Evaluation – Outcome Measure, the Beck Depression Inventory II and the Beck Anxiety Inventory). **Results:** ADHD diagnosis was associated with lower educational status and more parental and teachers concerns about development and behaviour in childhood. Participants with ADHD also reported more ADHD symptoms on the ADHD Rating Scale, both in childhood and adulthood, compared to the other two groups. The participants who did not meet diagnostic criteria for ADHD had more current psychopathology; 50% had two or more other psychiatric disorders, compared with 35.5% of the participants with ADHD. No significant differences appeared between the two groups on the psychological scales (DASS, CORE-OM, BDI-II and BAI). **Conclusion:** Adults referred to the ADHD clinic at Landspitali have multiple problems, regardless of whether they get ADHD diagnosis or not. Clinicians therefore need to be attentive of the adults who are referred to the ADHD clinic but do not meet diagnostic criteria.

Keywords: Attention Deficit Hyperactivity Disorder; Adult ADHD; General characteristics; Psychological wellbeing; ADHD Rating Scale

Adults Referred to the ADHD Clinic in Iceland: Clinical Characteristics

ADHD is a neurodevelopmental disorder that is characterized by inattention and/or hyperactivity- impulsivity and interferes with development and functioning (American Psychiatric Association, 2013). ADHD appears in childhood and often persists into adulthood, with prevalence estimates of 5% among children and 2.5% among adults (American Psychiatric Association, 2013). This is in accordance with other findings that approximately 50% of individuals with childhood ADHD continue to meet full diagnostic criteria for ADHD as adults (McGough et al., 2005). ADHD is more frequent in males than in females (American Psychiatric Association, 2013) and inattention symptoms persist more into aduldhood relative to the impulsivity/hyperactivity symptoms (Lara et al., 2009; Biederman, Mick, & Faraone, 2000; Wilens et al., 2009).

Studies have shown that adults with ADHD are at greater risk for other psychiatric disorders (Cumyn, French & Hechtman, 2009; Kessler et al., 2006; McGough, Smalley, McCracken, Yang, Home, Lynn & Loo, 2005). Cumyn, French, & Hechtman (2009) compared two groups of participants, one group of adults with ADHD diagnosis and another group of adults without ADHD. Results showed that 46.9% of ADHD participants had Axis I disorder and 50.7% had Axis II disorders, compared with 27.31% and 38.2% in participants without ADHD. Furthermore, ADHD is often associated with high rates of major depressive and anxiety disorder and studies have also shown high rates of antisocial disorder among adults with ADHD (Mick, Lehman, & Doyle, 1993; McGough et al., 2005).

ADHD is associated with earlier onset and a higher risk of substance use disorder (Wilens et al., 2009). Individuals with ADHD use illicit substances more often, particularly marijuana (Murphy & Barkley, 1996). They are also at higher risk for criminality. Mannuzza, Klein, & Moulton (2008) conducted a follow-up study among boys with ADHD and official arrest records showed that the ADHD group had significantly more often been arrested, convicted and incarcerated than the non-ADHD group. This is consistent with Satterfield et

al. (2007), were hyperactive boys had higher rates of adults arrests, conviction and incarcerations than controls.

The core ADHD symptoms have negative impact across multiple areas of function and quality of life. They often affect daily activities, relationships, work and physical and psychological well-being (Brod, Perwien, Adler, Spencer, & Johnston, 2005). Adults with ADHD often have lower educational achievement, and history of suspension and expulsion from school, problems associated to social interaction and marital problems. They also often have lower occupational achievement and have more frequent changes in employment than adults without ADHD (Murphy & Barkley, 1996).

This study is the first to examine the characteristics of adults with ADHD in Iceland. A better understanding of ADHD symptoms and their impact on multiple areas of function can improve diagnosis and treatment of adults with ADHD in Iceland and elsewhere. It is hypothesized that ADHD affects psychological wellbeing, educational achievement, alcohol- and drug use and offending behaviour. Also it is hypothesized that psychiatric comorbidity will be more common among those who meet diagnostic criteria for ADHD than those who did not meet diagnostic criteria for ADHD.

Method

Participants

A total of 531 adult participants were screened for ADHD at the ADHD clinic at Landspitali from January 2013 to December 2015, 264 (49.7%) males and 267 (50.3%) females, with the mean ages of 31.45 (range 18-73, SD = 9.6) and 31.96 years (range 18-63, SD = 9.5), respectively. Of the 531 participants,136 did not meet screening criteria for ADHD (“negative screening group”), 90 met screening criteria for ADHD, but did not meet diagnostic criteria for ADHD (“negative diagnosis group”), and 305 met diagnostic criteria for ADHD (“ADHD group”).

Materials

The ADHD Rating Scale (Adler et al., 2006) is a 18-item self-rating scale designed to screen for ADHD. Symptoms over the past two weeks are rated on a 4-point Likert scale ranging from 0-3 (0 = never or rarely, and 3 = very often, with high scores indicating more severe ADHD symptoms. The validity of the self-report and informant rating scales of the adult ADHD symptoms was compared with a semi-structured diagnostic interview. Interrater reliabilities of the diagnostic interview and internal consistency of the scale and both childhood and current symptoms were satisfactory (Magnússon et al., 2006).

Depression Anxiety Stress Scales (DASS; Lovibond and Lovibond, 1995) is a 42-item self-report instrument measuring symptoms of anxiety, depression and stress. Symptoms are rated on 4-point scale, ranging from 0-3 (0 = did not apply to me at all, and 3 = applied to me very much, or most of the time). Psychometric properties of the Icelandic version are satisfactory (Ingimarsson, 2010).

Clinical Outcome of Routine Evaluation – Outcome Measure (CORE-OM; Evans et al., 2000) is a 34-item self-report scale measuring four domains: Wellbeing (four items), Social functioning (12 items), Problems/symptoms (12 items) and Risk to self and to others (six items). Items are rated on a Likert scale ranging from 0-4 (0 = not at all, and 4 = most or all the time). The Icelandic version of CORE-OM has good validity, reliability and internal consistency (Kristjánsdóttir et al., 2015).

Beck Depression Inventory II (BDI-II; Beck, Steer, & Brown, 1996) is a 21-item self-report inventory measuring depressive symptoms. Symptoms over the past two weeks are rated on 4-point scale, ranging from 0-3 (0 =not present, and 3 = severe). Psychometric properties of the Icelandic version are satisfactory (Arnarson, Ólason, Smári, & Sigurdsson, 2008).

Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1988) is a 21-item self-report inventory and is rated on 4-point scale, ranging from 0-3 (0 = not at all, and 3 =

severely – I could barely stand it). Psychometric properties of the Icelandic version are satisfactory (Saemundsson et al., 2011).

The Mini International Neuropsychiatric Interview (MINI 5.0; Amorim, Lecrubier, Weiller, Hergueta, & Sheehan, 1998) is a brief, reliable and valid diagnostic structured interview exploring DSM-IV or ICD-10 criteria. MINI explores 17 axis 1 diagnoses and focuses mainly on current diagnosis, but also explores lifetime diagnoses where it is clinically relevant (Lecrubier et al., 1997). The validity of the Icelandic version of the MINI was compared with the Patient Health Questionnaire (PHQ), the DASS and the Composite International Diagnostic Interview (CIDI) in diagnosis of depression and anxiety disorder. The results showed that the Icelandic version of the MINI was promising in the diagnosis of depression and anxiety disorder (Sigurdsson, 2008).

The patient reference form for the ADHD clinic at Landspitali involved background characteristics and questions about school attendance, vocational status, parental and teachers concerns about development and behaviour in childhood, history of alcohol- and drugs use and crimes. The doctor reference form involved information about the patient's medication use, alcohol- and illicit drug use and history of criminality. The outcomes on the reference forms, questionnaires and information about the diagnosis (whether the participant met diagnostic criteria for ADHD) and other diagnoses according to the MINI were obtained through medical records.

Procedure

Participants and referring doctor completed reference forms. Participants also completed the ADHD Rating Scale for ADHD symptoms in childhood and adulthood. When the reference forms arrived to the ADHD clinic at Landspitali, the secretary in the ADHD clinic contacted an informant designated by the participant (in most cases a family member), who completed the ADHD Rating Scale for childhood- and adulthood ADHD symptoms of

the participant on the phone. The participants who met screening criteria for ADHD (T-score 65 and above on the ADHD Rating Scale), received a diagnostic interview and were asked to fill out the psychological instruments.

Statistical Analysis

Comparisons of background variables between the three groups (negative screening group, negative diagnosis group and ADHD group) were carried out, using chi-square test. ANOVA was used for comparison between the three groups on the ADHD Rating Scale. Differences in outcomes on the psychological instruments for the negative diagnosis group and ADHD group were examined with independent samples *t*-tests. Data were entered into IMB SPSS Statistics, version 24. A *p* value of <.05 was used for statistical significance.

Results

Of the 531 participants who were referred to the ADHD Clinic at Landspitali, 136 screened negative for ADHD, 90 did not meet diagnostic criteria for ADHD and 305 met diagnostic criteria for ADHD. The participants in the ADHD group were significantly younger (mean age 31 years) than the participants in the negative screening group (mean age 35 years) and the negative diagnosis group (mean age 33 years). Clinical diagnoses according to the ICD-10 were 231 (75.7%) inattentive subtype and 74 (24.3) combined subtype of inattention and hyperactivity/impulsivity. General characteristics of the three groups are listed in Table 1.

Participants in the ADHD group reported more parental or teachers concern about development or behaviour in childhood (91.6%), compared to the negative screening group (78.9%) and the negative diagnosis group (83.3%). Significant difference was between the groups on academic achievement, were 9,2% participants in the ADHD group had completed university degree, compared to 27.4% participants in the negative screening group and 15.6%

in the negative diagnosis group. No significant differences were found between the three groups on vocational status, crimes, alcohol- and drug use and medication use.

Table. 1. *General Characteristics of the Negative Screening Group, the Negative Diagnosis Group and the ADHD Group.*

Characteristics	**Negative screening (N =136)** *n (%)*	**Negative diagnosis (N =90)** *n (%)*	**ADHD group (N = 305)** *n (%)*	***p***
Female	71 (50.5)	45 (52.0)	151 (49.5)	.871
Reference				
Primary health care	106 (77.9)	62 (68.9)	245 (80.3)	.072
Psychiatrists within Landspitali	16 (11.8)	19 (21.1)	43 (14.1)	.137
Psychiatrists in private practice	14 (10.3)	9 (10.0)	17 (5.6)	.138
Diagnosed ICD-10 ADHD subtype				
Inattentive	N/A	N/A	231 (75.7)	
Combined	N/A	N/A	74 (24.3)	
Medication use (for at least three months, past two years)				
Antidepressants	57 (46.3)	42 (48.8)	117 (40.5)	.291
Sedatives	6 (7.0)	6 (7.0)	17 (5.9)	.814
Anticonvulsants	10 (4.9)	7 (8.1)	15 (5.2)	.417
Antipsychotics	15 (12.2)	9 (10.5)	22 (7.6)	.309
Hypnotics	14 (11.1)	10 (11.5)	25 (8.5)	.580
Concerns in childhood	60 (78.9)	50 (83.3)	230 (91.6)	**.006**
Academic achievement				
Did not finish elementary school	4 (3.0)	5 (5.6)	27 (8.6)	.068
Elementary school	51 (37.8)	50 (55.6)	175 (57.4)	**.001**
High school / apprenticeship	43 (31.6)	21 (23.3)	75 (24.6)	.221
University	37 (27.4)	14 (15.6)	28 (9.2)	**<.001**
Vocational status				
Unemployed	13 (11.6)	9 (12.5)	37 (14.6)	.712
Employed	59 (52.7)	35 (48.6)	102 (40.3)	.071
Student	40 (35.7)	28 (38.9)	114 (45.1)	.217
Alcohol use				

Not past year	29 (21.8)	8 (9.3)	54 (17.8)	.077
Less than once a month	62 (46.6)	35 (40.7)	121 (39.9)	.499
Once a month or more	30 (22.6)	31 (30.0)	95 (31.4)	**.033**
Drug use				
Not past year	24 (18.2)	13 (14.8)	45 (14.8)	.175
Less than once a month	6 (4.5)	9 (10.2)	23 (7.6)	.311
Once a month or more	2 (1.5)	3 (3.4)	7 (2.3)	.751
Arrested	36 (26.7)	20 (22.5)	84 (27.7)	.615
Convicted	21 (15.8)	14 (15.7)	47 (15.5)	.997
Incarcerated	2 (1.5)	5 (2.6)	8 (5.6)	.181
Current psychiatric comorbidity				
Major depressive disorder	N/A	21 (23.3)	46 (15.8)	.098
Dysthymia	N/A	28 (31.1)	51 (17.4)	**.005**
Panic disorder	N/A	18 (20.0)	44 (15.0)	.262
Agoraphobia	N/A	8 (8.9)	10 (3.4)	**.032**
Social anxiety disorder	N/A	26 (28.9)	66 (22.5)	.216
Generalized anxiety disorder	N/A	37 (41.1)	83 (28.3)	**.022**
Posttraumatic stress disorder	N/A	4 (4.4)	12 (4.1)	.885
Obsessive-Compulsive disorder	N/A	6 (6.7)	10 (3.4)	.177
Alcohol or drug use disorder	N/A	6 (6.7)	19 (6.5)	.951
Anti-social personality disorder	N/A	6 (6,7)	16 (5,5)	.667
Number of comorbid disorders				
No disorder	N/A	23 (25.6)	109 (37.2)	**.042**
One disorder	N/A	22 (24.4)	80 (27.3)	.591
Two disorders or more	N/A	45 (50.0)	104 (35.5)	**.014**

Note: Negative screening = participants who did not meet screening criteria for ADHD; Negative diagnosis = participants who did not meet diagnostic criteria for ADHD; ADHD group = participants who met diagnostic criteria for ADHD.

Regarding comorbidity, the negative diagnosis group significantly more often met diagnostic criteria for dysthymia, agoraphobia and generalized anxiety disorder, compared to the ADHD group. Significant difference was between the groups on number of comorbid disorders, where 50.0% of the participants in the negative diagnosis group met diagnostic criteria for two disorders or more compared to 35.5% of the participants in ADHD group. Furthermore, 37.2% of the participants in the ADHD group did not meet diagnostic criteria

for any comorbid disorder, compared to 25.6% of participants in the negative diagnosis group.

Means and standard deviations were calculated for all the subscales on the ADHD Rating Scale (see Table 2). Significant differences were found for all subscales between the groups except for hyperactivity/impulsivity symptoms in adulthood. In all cases, the sample means were higher for the ADHD group compared the negative screening group and the negative diagnosis group. Moreover, the sample means were lower for the negative screening group, compared to the negative diagnosis group and the ADHD group.

Table 2. *Outcomes on the ADHD Rating Scale for the Negative Screening Group, the Negative Diagnosis Group and the ADHD Group.*

	Negative Screening ***M (SD)***	**Negative diagnosis** ***M (SD)***	**ADHD group** ***M (SD)***	***F***
IA self-report childhood	61.8 (11.7)	67.0 (10.8)	71.9 (7.9)	$F_{(2, 317)} = 29{,}50$*
HI self-report childhood	56.9 (11.1)	61.0 (14.1)	64.0 (11.1)	$F_{(2, 317)} = 9{,}01$*
IA self-report adulthood	72.7 (12.9)	75.5 (10.4)	79.4 (9.0)	$F_{(2, 315)} = 12{,}82$*
HI self-report adulthood	60.8 (12.6)	61.0 (15.2)	67.6 (43.7)	$F_{(2, 315)} = 1{,}26$
IA informant childhood	49.1 (7.6)	70.1 (14.5)	78.2 (13.9)	$F_{(2, 302)} = 113{,}59$*
HI informant childhood	45.3 (5.8)	55.5 (13.2)	62.2 (15.2)	$F_{(2,302)} = 35{,}96$*
IA informant adulthood	55.6 (12.2)	67.8 (12.3)	74.2 (14.6)	$F_{(2, 316)} = 42{,}04$*
HI informant adulthood	48.1 (10.9)	55.8 (12.4)	59.7 (14.5)	$F_{(2, 316)} = 17{,}23$*

Note: IA = inattention symptoms; HI = hyperactivity/impulsivity symptoms.

*$p < .05$

Means and standard deviations were calculated for the DASS, the CORE, the BDI and the BAI (see Table 3). No significant differences were found between the negative diagnosis group and the ADHD group on the scales. However, the sample means for both groups were higher in all cases compared to mean scores of Icelandic university students.

Table 3. *Means, standard deviations and t-values of the psychological scales for the negative diagnosis group and the ADHD group.*

	Negative diagnosis M (SD)	**ADHD group M (SD)**	**t-value**	**University students in Iceland M**
DASS				
Depression; *M (SD)*	15.3 (11.1)	14.6 (10.7)	.465	4.8
Anxiety; *M (SD)*	11.1 (10.1)	10.7 (8.7)	.306	4.4
Stress; *M (SD)*	17.9 (11.1)	20.0 (9.4)	-1.333	8.8
CORE				
All items; *M (SD)*	15.5 (7.3)	15.1 (6.9)	.395	13.9
Non-risk items; *M (SD)*	18.1 (8.0)	17.7 (7.8)	.312	11.6
Wellbeing; *M (SD)*	18.6 (9.6)	18.4 (9.5)	.165	11.2
Functioning; *M (SD)*	16.6 (7.9)	16.6 (7.6)	-.043	12.3
Problems; *M (SD)*	19.4 (8.8)	18.7 (8.8)	.587	11.0
Risk; *M (SD)*	2.5 (5.0)	2.9 (4.9)	-.541	1.4
BDI-II; *M (SD)*	24.0 (16.4)	23.4 (12.9)	.144	8.8
BAI; *M (SD)*	21.1 (13.7)	16.8 (10.7)	1.196	13.5

Note: Negative diagnosis = participants who did not meet diagnostic criteria for ADHD; ADHD group = participants who met diagnostic criteria for ADHD.

Discussion

The aim of this study was to examine the characteristics and psychological wellbeing of adults screened for ADHD at the ADHD clinic in Landspitali _The National University Hospital of Iceland. The ADHD clinic at Lanspitali was established in the response to a growing demand for ADHD diagnosis in adults and to prevent misuse of ADHD metications. The results of this study indicate that ADHD is related to lower educational achievement and more parental or teachers' concerns about their development or behaviour in childhood. The most important finding from this study is that all three groups of adults screened for ADHD were similar to one another.

No significant differences were between the three groups on alcohol- and drug use. Moreover, the alcohol use was more among the negative diagnosis group compared to the other groups. There was no significant difference between the groups on history of criminality. Furthermore, the number of participants who had been arrested or convicted was high for all three groups in this study compared to controls in other studies (Mannuzza, Klein, & Moulton, 2008; Satterfield et al., 2007). This results are consistent with Young, Toone, & Tyson (2003), were no significant difference was between the participants that did not meet diagnostic criteria for ADHD (clinical control group) and the participants with ADHD regarding police contact in aduldhood.

Regarding comorbidity, the negative diagnosis group more often met diagnostic criteria for dysthymia, agoraphobia and generalized anxiety disorder compared to the ADHD group. No significant differences were between the groups regarding other disorders. However, the psychiatric comorbidity in both groups was high compared to the Icelandic population. According to Stefánsson & Líndal (2009), the twelve-month prevalence among Icelandic population is 1.4% for social anxiety disorder and 1.7% for generalized anxiety disorder, compared to 28.9% for social anxiety disorder in the negative diagnosis group and 22.5% in the ADHD group and 41.1% for generalized anxiety disorder in the negative diagnosis group and 28.3% in the ADHD group. Moreover, the participants in the negative diagnosis group were more likely than the participants in the ADHD group to have two or more comorbid disorders. The difficulties in concentration among the participants who did not meet diagnostic criteria for ADHD may be caused by anxiety rather than only ADHD symptoms.

Outcomes on ADHD Rating Scale showed consistency between self-report of ADHD symptoms and informant report of ADHD symptoms, both in childhood and adulthood. Participants with ADHD and their informants reported more ADHD symptoms in childhood and adulthood (current symptoms) compared to the negative screening group and the

negative diagnosis group. The only exception is self- report of current hyperactivity/ impulsivity symptoms, were significant difference was not found between the groups. These results indicate that the ADHD Rating Scale is useful in initial screening for ADHD.

No significant differences were found between the ADHD group and the negative diagnosis group on outcomes of questionnaires measuring depression, anxiety and stress. There was also no significant difference between the groups on outcomes of questionnaire measuring wellbeing, functioning, problems and risk. However, the mean scores in both groups are high on all outcomes compared to Icleandic university students (Kristjánsdóttir et al., 2015; Gudjonsson, Sigurdsson, Smari, & Young, 2009; Saemundsson et al., 2011; Arnarson et al., 2008). This results indicate that the participants in both groups have symptoms of depression, anxiety and stress. It is possible that the symptoms affect their wellbeing and functioning, making them in more risk to self and to others.

The results of this study indicate that adults referred to the ADHD clinic at Landspitali have multiple problems regarding alcohol- and drug use, criminality, psychiatric disorders and psychological wellbeing, regardless of whether they get ADHD diagnosis or not. Clinicians therefore need to be attentive of the adults who are referred to the ADHD clinic but do not meet diagnostic criteria. The results also indicate that ADHD Rating Scale is useful screening tool for ADHD. Self-report of ADHD symptoms and support from an informant are essential in the screening process, along with information about academic achievement and development and behaviour in childhood.

A limitation of the study is that there are three clinical groups but no normal control group. The groups all include participants with ADHD symptoms (i.e. problems with attention and/or hyperactivity and impulsivity) and are therefore similar in many ways. In order to get a better understanding of adults with ADHD in Iceland, it is worthwhile for future research to include normal control group to compare to the ADHD group. The results could therefore be compared to foreign studies in order to examine if characteristics of adults

with ADHD in Iceland are similar to characteristics of adults with ADHD in other countries. It would also be beneficial for future research to do a follow-up study on outcomes of the questionnaires used in this study in order to examine if ADHD diagnosis (and medication in some cases) affects ADHD symptoms and psychological wellbeing. Finally, it would be interesting to do a retrospective study to examine if the participants who did not meet diagnostic criteria has found explanations for their symptoms and if their psychological wellbeing has improved.

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