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ORIGINAL ARTICLE

Identifying ADHD in adults using the international personality disorder examination screening questionnaire

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Abstract

Background: Attention deficit hyperactivity disorder (ADHD) is frequently diagnosed concurrently with a personality disorder (PD) in adulthood. Both are trait-like chronic disorders with substantial similarities.
Aim: To measure the accuracy of the International Personality Disorder Examination screening questionnaire (IPDE-SQ) in identifying ADHD in adults from a psychiatric population.
Method: Participants ($n = 119$) from mental health services completed an ADHD interview and the IPDE-SQ.
Main results: Although many IPDE-SQ subscales demonstrated good sensitivity in identifying ADHD, a potential 11-item scale from IPDE-SQ components had excellent sensitivity (84%) and specificity (82%).
Conclusions: An 11-item subscale from the IPDE-SQ shows potential as a screening instrument for ADHD in an adult psychiatric population.

Keywords

Attention deficit hyperactivity disorder, personality disorder examination, screening instrument

History

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Introduction

Attention deficit hyperactivity disorder (ADHD) in children is characterised by the core signs of inattention, hyperactivity and impulsiveness (American Psychiatric Association, 2000; National Institute for Health and Clinical Excellence, 2014). The clinical syndrome and associated impairments persist into adulthood in around 65% of cases, of which 15% continue to meet full DSM-IV criteria (Miller et al., 2008). Guidelines from the UK National Institute for Clinical Excellence (2008) (National Institute for Health and Clinical Excellence, 2014) recommend that treatment for childhood ADHD be continued into adulthood if symptoms persist. Estimates of prevalence for ADHD vary widely and range between 3 and 9% of young people and 2% of adults (American Psychiatric Association, 2000; Young & Bramham, 2007; Young et al., 2003; WHO, 1993).

Personality disorders are characterised by deeply ingrained, maladaptive and inflexible personality traits that cause substantial distress or impairment (American Psychiatric Association, 2000; WHO, 1992). The estimates of prevalence in community samples have varied from 4 to 15% (Huang et al., 2009). Personality disorders are common in psychiatric settings with estimates of prevalence rates between 10 and 72% (Zimmerman et al., 2005). For both ADHD and PD, apart from pharmacological treatment, psychological therapies including dialectical behavioural therapy and cognitive behavioural therapy are now becoming more available to people suffering from these disorders and demonstrate positive effect on symptoms of poor impulse control and emotional instability (McCarthy et al., 2013; Safren et al., 2010; Swales et al., 2012).

There is a high degree of similarity between the symptoms of several personality disorders and ADHD in adults. Both disorders descriptively overlap with common core behavioural domains, affect dysregulation and impulse control (Dowson et al., 2004; Lampe et al., 2007; Matthies & Philipsen, 2014; Miller et al., 2008). These manifestations are characterised by experiencing attention deficits, lack of impulse control and affect regulation, low self-esteem, states of aversive inner tension, anxiety and mild depressive and/or dysthymic states (Distel et al., 2011; Sprafkin et al., 2007).

Several studies suggest an increased risk of personality disorders in youths who have suffered childhood ADHD (Barkley et al., 2004; Bernstein et al., 1996; Biederman et al., 1996; Fossati et al., 2002; Huang et al., 2009; Lahey et al., 2005; Mannuzza et al., 1998; Pliszka, 1998; Young et al., 2003). Furthermore, nearly 90% of a sample of adults with personality disorders reported clinically significant ADHD symptoms in childhood (Lahey et al., 2005). Studies have demonstrated high rates of comorbidity between various

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subtypes of personality disorder, implying that the presence of one of the disorders should not necessarily exclude the other (Fossati et al., 2002; Jacob et al., 2007; Philipsen et al., 2008). Of particular interest has been the association of borderline and antisocial and ADHD (Miller et al., 2008). Those with persistent ADHD are at higher risk for antisocial and paranoid personality disorders. Another study reported that adults with severe borderline personality disorder frequently show a history of childhood ADHD (41.5%) (Philipsen et al., 2008). In the case of antisocial personality disorder, a known precursor in adolescence is conduct disorder (CD), and there is a strong inter-relationship between these two disorders and ADHD (MacDonald et al., 1999).

While it is increasingly recognized that ADHD persists into adulthood, diagnostic validity of ADHD in adult population poses greater challenges in adults than in children. Although a number of self-report measures exist for screening of ADHD in children and adults, very little is known about the utility of these measures in screening for ADHD in patients from secondary mental health services (Taylor et al., 2011). At least 14 scales have been used in the process of making diagnostic assessments in an adult population although only two instruments (Connors Adult ADHD Rating Scale (CAARS) and the Wender Utah Rating Scales) possess acceptable psychometric properties for assessing ADHD in adults (Taylor et al., 2011). To date, the Conner's Adult ADHD Rating Scales (CAARS) are the standard instruments for assessment of ADHD symptoms in adults (Rosler et al., 2010). A recent systematic review examining the 14 most prevalent ADHD self-reported scales concluded CAARS-LV to be the most reliable and validated instrument with strong psychometric properties (Taylor et al., 2011). A previous validation study in a substance misuse clinic of the same geographical area where the present research is conducted demonstrated a cut off of 100 from a maximum of 198 is suggestive of a highly likely diagnosis of ADHD.

ADHD in adults is a substantial cause of morbidity in both psychiatric and primary care settings (Faraone et al., 2004). Most adults with ADHD are undiagnosed (Lamberg, 2003; Ratey et al., 1992) which may have serious consequences for individual's productivity, their families and society. Adults with untreated ADHD often misuse drugs and alcohol at an early age and have higher rates of substance dependence (Goodman, 2007; Wilens et al., 2008).

Diagnosing ADHD, in general adult psychiatric settings, has remained a challenging task. The primary symptoms may also suggest a wide range of other psychiatric diagnosis such as depression, psychosis, bipolar affective disorder, mania, generalised anxiety disorder, compulsive disorder, substance misuse and personality disorder (McIntosh et al., 2009; Wilens et al., 2006; Wilens & Fusillo, 2007). Consequently, general adult psychiatry services are increasingly being required to assess and treat ADHD in adults. On the presumption that there are predictable outcomes of ADHD as a personality disorder and both disorders are chronic, enduring with high levels of similarity between symptoms, the implications and avenues for further research on use of IPDE-SQ and ADHD would be considerable. Furthermore, a combined screening instrument for personality disorder and ADHD would be valuable. The benefits of using IPDE-SQ as a screening test for ADHD would include pinning down the most persistent potential associations between several PDs and ADHD. Evidence of overlapping or comorbid symptoms within both disorders could lead to new diagnostic and treatment considerations especially in psychosocial and pharmacological interventions.

Hence, the objective of the study was to use a well-validated personality disorder screening instrument [the International Personality Disorder Examination screening questionnaire (IPDE-SQ); ICD-10 version] to identify ADHD in adults in a clinical population.

Method

Participants

The project was an observational cross-sectional survey. The study sample was drawn from an NHS inpatient assessment facility located in South East of England. The mental health services cater for a population of approximately 715 000. The adult psychiatric inpatient services are housed within four treatment and one psychiatric assessment unit. Informal admissions to all psychiatry wards take place via a 20 bedded psychiatric assessment unit where the study sample was recruited between June 2010 and August 2011. The unit had a rapid turnover (approximately 40 admissions per week). Referral to the unit consists of self-presentation via Accident and Emergency department, consultant or GP referrals and the recommendation of home treatment team. The majority of patients are discharged following a multidisciplinary assessment after an average stay of 3 days. A total of 119 participants were recruited. For the purposes of the study, participants were offered to complete study questionnaires and ADHD DSM-IV interview. ADHD interview was conducted to elicit impairment across all 18 core items as defined in DSM-IV manual. Wherever possible participants were requested to complete the self-report scales before undergoing the DSM-IV-based interview.

Patients were excluded if they were unable to give written informed consent due to acute mental illness, incapacity or poor language skills or if they were detained under the mental health act. Fewer than 10% of patients were excluded.

The project was approved by the Local Research Ethics Committee. Written informed consent was obtained from each patient.

Instruments

The World Health Organisation International Personality Disorder Examination (IPDE) interview (Loranger et al., 1994) is currently regarded as ''gold standard'' tool for diagnosis of personality disorder. The IPDE-SQ is 59 true-false item self-administered screening questionnaire focuses on various areas of personality and behaviour such as work, interpersonal relations, affects, reality testing and impulse control. The items suggest categorisation within the accepted personality disorder groups: Paranoid, Schizoid, Dissocial, Emotionally Unstable (Impulsive Type), Emotionally Unstable (Borderline Type), Histrionic, Anankastic, Anxious (Avoidant) and Dependent. Validation properties for the screening instrument are not reported in the literature despite

its commercial publication (Loranger et al., 1997; Rogers, 2001). However, the available literature supports satisfactory performance of IPDE-SQ subscales in accurately estimating PD diagnosis (Lewin et al., 2005; Slade et al., 1998).

The American Psychiatric Association Diagnostic and Statistical Manual DSM-IV ADHD clinical interview is based on the criteria laid out in the DSM-IV (American Psychiatric Association, 2000). This is widely regarded as the recognised diagnostic criteria for ADHD in adulthood. ADHD can be divided into three subtypes: predominantly inattentive; predominantly hyperactive-impulsive and the combined type.

Statistical analysis

All data entry and analysis were carried out using conventional statistical software packages: PASW (19.0) and Medcalc (12.0). A linear discriminant function analysis was conducted to identify components of IPDE-SQ which are likely to indicate a presence of ADHD. Receiver operating curve (ROC) analysis allowed the identification of the optimal cut-off of the screening instrument which maximises sensitivity and specificity.

Results

Demographic and clinical characteristics

One hundred nineteen patients were recruited including 7 patients who were unable to complete both the self-report questionnaires and ADHD interview. 69 (58.0%) were males. The mean age was 34 years (SD = 11.4, range = 18–60). 109 (91%) were White British. The self-reported diagnosis of the patients is shown in Table 1. The most common diagnosis was depression (51%) followed by anxiety disorders (28%), personality disorder (23%), self-harm (18%), alcohol problems (17%), mania/manic depression (14%) and schizophrenia (8%).

Prevalence of personality disorder

A total of 89% (96) participants endorsed a probable personality disorder on the self-reported 59-item IPDE-SQ scale. The distribution of personality disorder subtypes were as follows: 76% (90) meet the criteria for Anxious-Avoidant personality disorder, 74% (88) for Borderline, 73% (86) for Schizoid, 65% (77) for Anankastic, 62% (74) for Dependent, 61% (72) for Paranoid, 58% (69) for Impulsive, 50% (59) for Histrionic and 35% (41) for Dissocial. [95% (113) qualified for more than one type of co-occurring personality disorder.]

Table 1. Self endorsed mental disorders by participants.

Diagnosis	Number of participants (%)
Schizophrenia	10 (8.4%)
Schizoaffective disorder	4 (3.4%)
Psychotic illness	4 (3.4%)
Manic depression or mania	17 (14.3%)
Depression or psychotic depression	61 (51.3%)
Personality disorder	27 (22.7%)
Anxiety disorder	33 (27.7%)
Panic disorder or agoraphobia	9 (7.6%)
Post-traumatic stress disorder	7 (5.9%)
Self-harm	22 (18.5%)
Adjustment disorder	5 (4.2%)
Eating disorder (including anorexia nervosa and bulimia)	4 (3.4%)
Alcohol problems	20 (16.8%)
Illicit drug use	10 (8.4%)
Dementia	0 (0%)
No mental illness	0 (0%)
Don't know or other	6 (5%)
Diagnosis not answered	1 (0.8%)

Prevalence of ADHD in adults

In the total sample of 119 participants, total of 14.2% (17) received a diagnosis of ADHD inattentive type and 8.4% (10) fulfilled the criteria for ADHD hyperactive impulsive type. A total of 36.1% (Skirrow et al., 2009) met the criteria for ADHD of the combined type. No participant in the study sample had a self-endorsed diagnosis of ADHD.

Association of various IPDE-SQ PD's with ADHD

The frequency (and percentages) of the probable PD subtypes were measured with respect to the different ADHD types (Table 2). Dissocial PD IPDE-SQ subscale was largely concurrent with ADHD, amongst 39 participants only two had no association with ADHD. In contrast to the remaining, about a third of participants from anankastic, schizoid, dependent, anxious avoidant and borderline PD screening subscales had no association with ADHD. Combined ADHD was often associated with all IPDE-SQ subscales in contrast to remaining ADHD subtypes.

Utility of IPDE-SQ subscales for identifying ADHD

A total sample of 109–113 participants was analysed for calculating the sensitivity and specificity of IPDE-SQ subscales for identifying combined ADHD based on the DSM-IV interview. The IPDE Borderline personality disorder subscale obtained the highest value of sensitivity at 88% with other subscales having sensitivities from 61 to 83%. The highest specificity sub-scale was obtained for dissocial personality disorder (80%) with other sub-scale specificities ranging from 30 to 72%.

Of the 59 items in the IPDE-SQ, 11 were found to discriminate significantly between those patients with ADHD and those without (Table 3). A proposed ADHD subscale was constructed with 11 items including reverse scoring of 3 items. The scores of this ADHD subscale of the IPDE-SQ ranged from 0 to 10 with a mean of 5.0 (SD = 2.2) and a median of 5. Using ROC analysis, an AUC = 0.873 (95% CI 0.805–0.942) was found indicating that the subscale discriminated well between patients with ADHD and without. The optimal cut-off to maximise sensitivity and specificity of the scale was a score of 5 resulting in sensitivity of 84% and specificity of 82%.

Discussion

This study shows that an 11-item self-completion screening tool can be generated from the International Personality Disorder Examination (IPDE-SQ) screening questionnaire. The tool has good sensitivity and specificity (exceeding 80%) for adult ADHD in mentally ill patients. In all cases, the

Table 2. Association of IPDE-SQ PD's with ADHD.

IPDE-SQ subscale PD	No ADHD, *n* (%)	ADHD inattentive, *n* (%)	ADHD hyperactive-impulsive, *n* (%)	Combined ADHD, *n* (%)
Anankastic	27 (38%)	9 (13%)	8 (11%)	28 (39%)
Anxious-avoidant	26 (31%)	7 (8%)	15 (18%)	25 (42%)
Borderline	25 (30%)	9 (11%)	12 (15%)	37 (45%)
Dependent	23 (34%)	6 (9%)	10 (15%)	29 (43%)
Dissocial	2 (5%)	3 (8%)	8 (21%)	26 (67%)
Histrionic	13 (24%)	5 (9%)	9 (16%)	28 (51%)
Impulsive	11 (17%)	7 (11%)	13 (20%)	34 (52%)
Paranoid	14 (21%)	9 (13%)	12 (18%)	33 (49%)
Schizoid	26 (32%)	8 (10%)	14 (17%)	33 (41%)

Table 3. 11-Item components of IPDE-SQ highly likely to identify ADHD (IPDE-SQ subscale).

Components	IPDE-SQ subscale
1. I lose my temper and get into physical fights (True/False)	Dissocial
2. It's hard for me to stay out of trouble (True/False)	Dissocial
3. I get into very intense relationships that don't last (True/False)	Borderline
4. I take chances and do reckless things (True/False)	Impulsive
5. I show my feelings for everyone to see (True/False)	Histrionic
6. I don't react well when someone offends me (True/False)	Paranoid
7. Most people are fair and honest with me (True/False)	Paranoid
8. When I'm praised or criticised I don't show others my reaction (True/False)	Schizoid
9. I'm a very cautious person (True/False)	Anankastic
10. I spend too much time trying to do things perfectly (True/False)	Anankastic
11. Let others make my big decisions for me (True/False)	Dependent

Items in bold italics are reverse scored – other true scores 1 and false 0.

diagnosis of ADHD was confirmed using the DSM-IV clinical interview.

The overlapping clinical features of ADHD and PD are predictable. For instance, intense anger and difficulty controlling anger, deficits in mood regulation may overlap considerably with ADHD and borderline or antisocial personality disorder (Mick et al., 2005; Skirrow et al., 2009). While IPDE-SQ has low-specificity values, it is accepted as a valuable screening instrument for identifying PD. Despite, the fact that specificity values in the IPDE manual remain unpublished (Loranger et al., 1997), a very limited number of existing studies in clinical and non-clinical samples indicate significant false positives on IPDE screening and low-specificity for the entire IPDE-SQ or for its subscales. In line with this, using the recommended IPDE's manual scoring cut-off of three, in a sample of university students, a specificity of 5.9% for the entire IPDE-SQ was demonstrated (Jennifer & McNair, 2010). Another study found a 5-fold incidence of false positives with regard to anxious avoidant PD and a sensitivity of 40% (Slade et al., 1998). Thus, it misidentifies substantial numbers of individuals who do not meet criteria for a PD based on the IPDE interview.

ADHD experts have argued that adult ADHD can be reliably distinguished from other conditions, that it follows a chronological course, predicts significant adverse outcomes, responds well to pharmacological and non-medical treatment, and should be diagnosed more commonly (Kessler et al., 2006; Kooij et al., 2010). Almost all participants in the current study self-declared to be suffering from one or more psychiatric disorders. ADHD as a currently understood has core features of hyperactivity, inattention and impulsivity. The comorbidity highlighted in this study supports the notion that ADHD symptoms are present in many psychiatric disorders including personality disorders.

Some experts claim that ADHD is often misdiagnosed in adults or confused with other psychiatric disorders leading to inappropriate treatment (Goodman, 2007). However, debate continues to raise questions about the validity of ADHD as a diagnostic entity in adults (Coghill, 2004; Moncrieff & Timimi, 2011; Suhr et al., 2009). Experts have argued concerning validity of ADHD as a concept not fulfilling any conventionally accepted medical criteria of a disorder or a disease and it is not easily distinguishable from ''normalit'' (Moncrieff & Timimi, 2011). In a sample of this study, a substantial number of participants suffer commonly with ADHD and more than one probable PD. Thus, the question arises that there might be a theoretical problem in the discrimination of PDs in patients in whom specific personality properties and ADHD symptoms like impulsivity, irritability, aggressiveness, mood fluctuations and sensation seeking are present since early childhood.

The clinical implications of the study are that firstly, a substantial proportion of participants under the care of general psychiatric services qualified for a DSM-IV diagnosis of adult ADHD. Secondly, items from the IPDE-SQ demonstrated overall high accuracy in screening for ADHD in adults. Hence, it would be prudent for clinicians to have a high index of suspicion for ADHD with or without concurrent personality disorder symptoms in mental health service users. Persistent symptoms of ADHD are associated with a wide range of impairments, including road traffic accidents,

relationship difficulties, educational and occupational failure and also with increased levels of antisocial, depressive, anxiety and substance misuse disorders (National Institute for Health and Clinical Excellence, 2014). Untreated ADHD in adults is associated with increased healthcare cost and distress throughout the life span to patients, health services and society.

High-sensitivity values of various PD subtypes on the IPDE-SQ demonstrated that ADHD can be identified by IPDE-SQ as a screening test. In other words, a clinician would consider that an affirmative screening of most of the PD's including Borderline, Impulsive, Paranoid, anxious avoidant and Schizoid PD would be correctly suspecting a patient with ADHD requiring further diagnostic interview for ADHD at least 78–88% of the time. This study focused on a unique interface of probable PD and ADHD. Literature supports that an assessment of personality in individuals diagnosed with ADHD is likely to offer new insights into lifelong functioning associated with ADHD and may also provide information related to impairment (Miller et al., 2008).

Due to the complex nature of disorders under research in the present project, the study was only able to approach towards one complex interface between ADHD and PD. However, good sensitivity values of the majority of the IPDE-SQ subscales in identifying ADHD suggest that it can potentially be adopted as a screening test for ADHD in adults in mental health population. Many impairments and symptoms pertaining to ADHD patients are commonly shared with enduring PD's. If the current findings are replicated in future studies, subsequently, in the long-term, implementing IPDE-SQ for routine assessments for both ADHD and PD screening may enhance the diagnostic and treatment opportunities.

Limitations

Participants in the study were mostly White representing the ethnicity of participants in the geographical area where this study was conducted. However, this population may differ from adults in other treatment settings, hence limiting the generalisability of the results. The IPDE-SQ is a screening instrument for personality disorder and is likely to have high sensitivity but low specificity. These properties may contribute to high rate of participants endorsing a personality disorder subtype on IPDE-SQ. The IPDE-SQ is not a reliable diagnostic instrument for personality disorder. However, it was not being used to diagnose personality in the current report – the IPDE-SQ items were being used to screen for adult ADHD. Hence, there was no advantage to supplementing the protocol with a formal diagnostic interview for personality disorder. In contrast, the DSM-IV clinical interview was used to confirm diagnosis of adult ADHD. Diagnostic criteria for latest DSM-5 are similar to DSM-IV. However, a lower threshold of symptoms (five instead of six) for ADHD diagnosis is required. It might be possible that more participants may fulfil the diagnosis of ADHD in the current sample if low threshold for symptoms according to DSM-5 is applied.

In conclusion, ADHD in a psychiatric sample is largely associated with various mental disorder and probable PD's. IPDE-SQ has the properties to identify and screen ADHD in adults. Furthermore, an 11-item subscale derived from IPDE-SQ has the potential to predict ADHD with excellent accuracy.

Declaration of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this article.

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