

# The assessment of comorbid disorders in ADHD children and adolescents

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## Abstract

**Purpose:** The aim of these examinations undertaken by their authors was to run analysis concerning types and frequency of comorbid disorders occurrence in Attention Deficit Hyperactivity Disorders (ADHD) children and teenagers.

**Materials and methods:** Research, carried out from May 2005 to January 2007, in the area of the Łódź province, used a questionnaire, worked out by the above authors, addressed to parents of ADHD children and teenagers (research made in schools and among patients contacting the Clinical Psychology Institute of CZMP), and the study of medical documentation. 28 persons, 5 girls and 23 boys made the research group 7 to 13 years old (with an average age of 10.2), who had previously been ADHD diagnosed.

**Results:** Out of disorders pointed out by parents, school problems of different degree of intensity appeared the most frequent ones, (39% of the examined) 18% with diagnosed dyslexia, head injuries (in 12 cases – 26%), bed-wetting at 8 boys (17% of all registered diseases). Moreover tics disorder was diagnosed in 3 boys, epilepsy in 2 boys, habitual activity in one girl and one boy.

**Conclusions:** Head injuries, bed-wetting and dyslexia have most often been comorbid disorders. Boys with ADHD more often than ADHD girls, suffer from comorbid disorders. Desirable in the scope of ADHD diagnosis, further research on co-accompanying illnesses and its improvement.

**Key words:** ADHD, comorbid disorders, children.

## Introduction

Attention Deficit Hyperactivity Disorders (ADHD) syndrome as a complex nozologic item causes a growing concern, mainly because of occurring symptoms and the number of disorders and accompanying diseases. In the USA it is estimated that from 3 to 5% of general population suffer from ADHD, and among the population of children this rate is 7%. Recently, a significant growth of research concerning comorbidity of other disorders with ADHD, such as conduct disorders, oppositional-defiant disorders, obsessive-compulsive disorders, anxiety disorders, depression [1], language development disorders, tics and epilepsy. Escalating ADHD symptoms can also lead to sleeping disorders, night fears, uncontrolled urination or stuttering. In Poland there is neither a credible population research analysis, assessing the level of dissemination of a hyperactivity syndrome among children and adolescents, nor any data reference to comorbidity of such syndrome disorders.

The aim of the study was the analysis concerning types and frequency of comorbid disorders in children and adolescents with ADHD.

## Materials and methods

The research was carried out from May 2005 to January 2007 in schools and among patients under care of the Clinical Institute of Psychology of CZMP in the area of the Łódź province. The authors worked out a questionnaire addressed to parents of ADHD children and adolescents, and carried out the study of medical documentation. 28 families were examined. As for gender, boys were a dominating group (23 vs 5), whose age ranged from 6 to 13 years.

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## Results

The average age of the research group was 10.2 years, birth weight spread from 1450 g to 4200 g (average 3319 g). Five children had caesarean section (18%), and 23 births (82%) were normal. Among pregnancy and birth disturbances there were: 5 prematurity, 2 cyesis dissemination, one newborn suffered from anaemia, and one was found umbilical cord wretched. During the pregnancy period in the group of mother-respondents, one of the mothers had hypertension, three mothers were treated with pharmacological medicaments (1 case of epilepsy), seven women were heavy smokers. In the study group the most frequent were school problem of a different level of intensification (39% of the total diagnosed disorders; 18% dyslexia diagnosed), then head injuries (26%) – one case cerebrum concussion, and night urination (17%, present in the case of 8 boys) (*Tab. 1*). Moreover, in the study group it was diagnosed that there were: 3 boys with tics, 2 boys with epilepsy, and one girl and one boy with habituation activities. 80% of indicated disorders applied to boys. Parents didn't indicate the occurrence of such disorders as depression, night fears or stuttering.

## Discussion

The recognition and therapy of comorbid disorders, which make the process of diagnosis complicated, are the crucial matter that influences the choice and effectiveness of therapy methods in order to improve the treatment of ADHD and its prognosis.

Among ADHD children and adolescents a frequent occurrence of dyslexia nature specific difficulties as for learning how to read and write has been observed, and refers to estimated 15-30% ADHD persons, disorthography (26%), disgraphia (no data found) and discalculy (28%). In one of the research projects, carried out in the USA, it was revealed that children, who in their school age suffered form dyslexia, showed higher indicators of ADHD symptoms before they started junior education, the so-called "zero class" [2]. The first molecular tests concerning the basis of ADHD and dyslexia comorbidity proved that both these disorders share a common genetic background. The positioning of genes in chromosome 6p, responsible for dyslexia that cause tendency to poor reading skill development, simultaneously, have an influence on hyperactivity [3]. In the study group of 28 children, 64% had school problems of a different intensification, five children had dyslexia. ADHD children have a higher risk of head injuries [4]. In our study head injuries were present at 12 cases, and they count 26% of the total neurological illnesses.

The urination is present among 10-20% of children in the school age. Previous research carried out in CZMP on the group of nine year-olds, suspected to be ADHD, reveal that 23% (from the group of 56 children) experienced night urination, and its frequency is higher among ADHD boys than girls. In the study group 8 out of 28 children, diagnosed on night urination (about 29%), were boys.

Depending on the criteria, conduct disorders comorbid ADHD syndrome in a range from 30% to 80% of cases and are

**Table 1. Comorbid disorders among Attention Deficit Hyperactivity Disorder (ADHD) children (N=28)**

Type of disorder	Number of cases
Night urination	8
Tics	3
Cerebrum concussion	1
Head injuries	12
Epilepsy	2
Habituation activities	2
School problems (e.g. dyslexia)	18
Total	46

the risk of more serious disorders of psychical development. Conduct disorders may modify other diagnoses, including central nervous system disorders [5]. As for mood disorders e.g. affective dual channel disorders and conduct disorders the symptoms such as hyperactivity and impulsivity are common. The data show that over 90% of ADHD children expose affective dual channel disorders mostly [4]. Depression is more frequent at adolescence than among children (2 to 8%), where the dissemination ration 0.5 to 2.5%. A certain percentage, that is 10 to 17% show conduct, fear or attention disorders. No diagnosis concerning conduct disorders and depression was proved in the present report.

Epilepsy coexists with numerous neuro-development disorders such as autism, migraine, ADHD, depression-fear disorders and injuries [6]. ADHD appears more frequently at epileptics than in general population. The incidence of epilepsy differs and is conditioned by the type of the ADHD subtype. Epilepsy occurs from 1.6% to 21% for the hyperactive type and the mixed type. For attention deficit type epilepsy it is estimated at 24% to 26% [7-9]. In recent study, in which ADHD diagnostic criteria were neatly respected, it was stated that the frequency of this type for epilepsy was 20% [10]. Study carried out by Dunn in 2003 among 175 children aged 9 to 14 years old showed that in the case of epilepsy and ADHD co-occurrence the type of an attack and the location of epilepsy focus do not bare a significant meaning for the risk of ADHD existence [7]. After the analysis of parents' surveys two children had epilepsy.

Tourette's Syndrome is one of the most frequent cause of tics, 1-3% of the population, and it is four times ofter for boys, the intensification of symptoms is observed among 10-12 year-olds. The occurrence of ADHD symptoms is more frequent for children with Tourette's Syndrome than for general population. The comorbid of Tourette's Syndrome and ADHD is marked with 20-90% [11,12]. Hyperactivity and impulsivity dominate over attention deficit for Tourette's Syndrome children. In the research carried out on 51 patients (average age 11.2 years) treated due to tics, the comorbid of tics and ADHD syndrome was observed at 13 patients (25.5%). Hyperactivity occurred among 22%, impulsivity among 16%, attention disorder among 12%. The occurrence of obsessive-compulsive disorders and general fears was found in 23.5% of patients. Although four had night fears [13]. Three boys out of 28 children had tics and two children revealed habitual activities, which proves the frequency of occurrence these neurotic illnesses among ADHD

children and adolescents. Foetus alcoholic syndrome is a clinically diagnosed nozologic item with different-level disorders of central nervous system functions (static encephalopathy) caused by addictive alcohol drinking by a pregnant woman. None of the mothers in the research group did not confirm alcohol drinking while pregnancy period and there was suspicion of this kind towards any of the examined children.

## Conclusions

The ADHD diagnosis has more often been put in boys than girls. Head injuries, night urination and dyslexia occurred more often in children with ADHD. Boys with ADHD more often than ADHD girls, suffer from comorbid disorders. Desirable in the scope of ADHD diagnosis, further research on comorbid disorders and its improvement.

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