

# Family Functioning and Psychosocial Characteristics in Children with Attention Deficit Hyperactivity Disorder with Comorbid Oppositional Defiant Disorder or Conduct Disorder

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## SUMMARY

**Objective:** To compare the parental sociodemographic characteristics, prenatal and postnatal developmental variables, IQ and behavioral disturbances as well as family functioning and current psychiatric disorders in the parents of children with attention deficit hyperactivity disorder (ADHD) and the parents of children with ADHD and comorbid oppositional defiant disorder (ODD) or conduct disorder (CD).

**Method:** The sample consists of 92 children in the 6–11 age range, diagnosed with ADHD and ADHD with comorbid ODD/CD using DSM-IV diagnostic criteria. Parents completed the Child Behavior Checklist (CBCL) 4–18 and the Family Assessment Device (FAD) and were interviewed for current psychiatric treatment and alcohol consumption.

**Results:** 69.6% of the sample was diagnosed with ADHD and 30.4% with ADHD + ODD/CD. There were no differences between the two groups with respect to age, intelligence, characteristics of the neonatal period, age of walking and age of speech. Children with ADHD and comorbid ODD/CD had high CBCL subscale scores except for the social withdrawal and sexual problems subscales. Maternal depression and paternal drinking problems were high in the ADHD+ODD/CD group. The families of children with ADHD+ODD/CD also scored high at the level of 'unhealthy functioning' in the Roles and Behaviour Control subscales of the FAD.

**Conclusion:** The treatment of children diagnosed with ADHD with comorbid ODD / CD should include parental treatment and intervention addressing parental skills.

**Key Words:** Attention Deficit Hyperactivity Disorder, Oppositional Defiant Disorder, Conduct Disorder, family functioning, parental psychopathology

## INTRODUCTION

Comorbid diseases are observed frequently in Attention Deficit Hyperactivity Disorder (ADHD) as in other psychiatric conditions and consequently, psychiatrists are interested with these concurrences. It is well known that comorbid conditions in ADHD affect the course of the disease and cause changes in therapeutic approach. Use of different diagnostic measures, study design and information resources may be responsible from controversial reports about the prevalence of ADHD and related comorbidities (Weiss, 1996).

Biederman and colleagues performed a comorbidity study in children with ADHD whose ages were between 6-17 (1998). They found high rates for Oppositional Defiant Disorder [(ODD) 46% in children and 33% in adolescents] and Conduct Disorder [(CD) 25% in children and 42% in adolescents]. In a model which defined the relationship between ADHD, ODD and CD it was proposed that severity of behavioral changes increased and CD development in a group of children with ADHD and ODD comorbidity was reported. In this subgroup of children which had CD, future development of antisocial personality disorder may be expected (Lahey et al. 1999). The role of ADHD in development of disruptive behavioral disorders is controversial, but comorbidity of ADHD and ODD may be an earlier indicator of CD symptoms. It is generally accepted that ADHD has an influence on

development and severity of CD (Loeber et al. 2000).

Many neurobiological factors may have a role in etiology of ADHD. It is emphasized that variables like age, gender, sociodemographic characteristics, parental psychiatric disorders may lead to biological tendency and concurrence of comorbidities (Faraone and Biederman 1999). In a study which was performed with 140 male children whose ages were between 6-17, adversity indicators of Rutter (severe marital discord, low social class, large family size, paternal criminality, maternal mental disorder and placement in a foster home) were found to be associated with the comorbidities and disorders in psychosocial functions related with ADHD (Biederman et al. 1995). Disorders in child-parent relations and family dysfunction were found to be related with ODD and CD development in ADHD (Cantwell 1996).

As a consequence of these data, in this study we aimed to compare developmental, sociodemographical and behavioral/emotional disturbances of children with ADHD alone or accompanying ODD and/or CD. We also aimed to evaluate family functioning and current parental psychiatric disorders in these children.

## **MATERIALS and METHOD**

### **Sampling and Procedures**

This study was performed in Gazi University Child Psychiatry Outpatient Clinics between November 2000-February 2002. Consecutive admittances were evaluated and 92 children who were primary school students, 6-11 years of age and diagnosed as ADHD were included in the study. Data about these children and their families were taken into consideration. Written consents of parents were obtained.

Diagnostic evaluations of children were performed separately by the two investigators of the study. All subjects who were directed to the outpatient clinic with complaints of "inattention" and/or "hyperactivity" were interviewed for DSM-IV (APA 1994) Attention Deficit and Disruptive Conduct Disorder criteria. Children with Specific Developmental Learning Disorders, Anxiety Disorders, Affective Disorders, chronic diseases like epilepsy or mental retardation were

excluded from the study. Children with accompanying ODD and CD were included and subgroups of ADHD were determined. Conners Rating Scales for Teachers and Conners Rating Scales for Parents (Şener et al. 1995, Dereboy et al. 1997, Dereboy et al. 1998) were used to support the diagnoses.

Parents were asked to complete the Child Behaviour Checklist (CBCL) 4-18 and Family Assessment Device (FAD). They were interviewed for current psychiatric treatment and alcohol consumption as well. Alcohol Use Disorders were evaluated via DSM-IV (APA 1994) criteria. Diagnoses of parents with psychiatric disorders were obtained from their attending psychiatrists. Patients with ADHD were separated into two groups according to the presence or absence of comorbidities (ODD and/or CD) and data analyses were performed on these groups.

### **Data Handling Instruments**

#### **Interview Form**

This form aims to collect sociodemographic data about the child and the family and to obtain information about the early developmental characteristics of the child. Current psychiatric treatments and alcohol consumption characteristics of the families are questioned as well.

#### **Child Behaviour Checklist for Ages 4-18 (CBCL)**

This scale has been developed by Achenbach and Edelbrock (1983) to evaluate areas of adequacy and problematic behavior of children according to their parents. Turkish translation of the 1991 version was performed by Erol and Kılıç and was reviewed by Erol and Şimşek (1998) in order to achieve the continuity with 1985 version (Akçakın 1985).

Two separate behavioral aspects can be obtained from this scale: "Withdrawn", "Somatic Complaints" and "Anxious/Depressed" subscales form "Internalizing scales" and "Delinquent Behavior" and "Aggressive Behavior" subscales form "Externalizing scales". Moreover, there are some other aspects of this scale like "Social Problems", "Thought Problems", "Sex Problems" and "Attention Problems". The sum of these

**TABLE 1.** Mean Values for Age, Intelligence Division, Number of Siblings and Basic Development Categories of Children with ADHD or ADHD+ODD/CD.

|                    | ADHD<br>(n=64) |               | ADHD+ODD/CD<br>(n=28) |               | p  |
|--------------------|----------------|---------------|-----------------------|---------------|----|
|                    | Mean           | SD/ (min-max) | Mean                  | SD/ (min-max) |    |
| Age (months)       | 98.17          | 17.30         | 100.43                | 16.31         | ns |
| Verbal IQ          | 104.38         | 14.08         | 102.29                | 8.89          | ns |
| Performance IQ     | 107.75         | 14.20         | 105.25                | 14.42         | ns |
| Total IQ           | 106.56         | 13.72         | 104.25                | 10.86         | ns |
| Walking (months)   | 12.09          | 1.71          | 12.29                 | 2.66          | ns |
| Talking (months)   | 19.64          | 4.83          | 20.64                 | 3.77          | ns |
| Number of siblings | 1              | 0-3           | 1                     | 0-2           |    |

nsns: not significant; age and IQ t test, walking, talking months and number of siblings M-W U test.

subscales forms the Total Problem score. Test-retest reliability was found as .70 and .84 and internal consistency was found as .39 and .86 (Erol et al. 1995).

We used DOS software program version of the scale in order to calculate subscale scores for boys and girls in different age groups (4-11) and total scores.

#### **Mc Master Family Assessment Device (FAD)**

nsns: not significant; age and IQ t test, walking, talking months and number of siblings M-W U test

Family Assessment device has been developed in the context of "Family Research Program" by Brown University and Butler Hospital in the United States (Epstein et al 1983). It aims to evaluate family functioning in a general manner and determine problematic areas. It includes 60 questions which are divided into 7 different areas. These are Problem Solving, Communication, Roles, Affective Responsiveness, Affective Involvement, Behavior Control and General Functions. Scores for scales change between 1.00 (healthy) and 4.00 (non-healthy). Generally scores below 2.00 are accepted as a non-healthy tendency in family functioning, but reliability studies are continuing. Test-retest reliability was found as .62 and .90 and internal consistency was found as .38 and .86 in Turkish version (Bulut 1990).

#### **Data Assessment**

ODD and CD take place in DSM-IV under the

title of "Attention Deficit and Disruptive Behavior Disorders" together and are generally combined in research studies. Relatively low number of CD subjects might lead to inconsistent statistical analysis, so data from ODD and CD subjects were handled together. SPSS version 11.0 was used for statistical analysis of study data. In assessment process, t-test was used for digital data and Mann-Whitney U test was used for scale scores. (Chi)  $\chi^2$ -square test was used for frequency comparisons. Level of significance was accepted as 0.05.

#### **FINDINGS**

There were 72 boys (78.3%) and 20 girls (21.7%). Five girls (25%) and 23 boys (31.9%) had ODD and/or CD diagnoses besides in addition to ADHD. There was not any significant difference between boys and girls for presence of comorbidities ( $\chi^2=0.357$ ,  $p>0.05$ ). Eighty-one % of the subjects with ODD and/or CD comorbidities were boys (n=23) and 17.9% were girls (n=5). Disruptive behavior disorder besides ADHD was more common in boys and the difference was statistically significant ( $\chi^2=11.571$ ,  $p<0.05$ ).

The two groups were similar for types of delivery, duration of pregnancy or presence of problems unique to neonatal period. There were no significant differences between groups for age, IQ, walking and talking months and number of siblings ( $p>0.05$ , Table 1).

ODD subjects constituted 75% (n=21) of comorbidities and the remainders were CD subjects (n=7, 25%). Sixty four subjects (69.6%)

**TABLE 2.** CBCL/4-18 Scale Scores of children with ADHD or ADHD+ODD/CD.

| Scales               | ADHD<br>(N=63) |       | ADHD+<br>(ODD/CD)<br>(N=28) |       | Total<br>(N=91) |         | Z     | p     |
|----------------------|----------------|-------|-----------------------------|-------|-----------------|---------|-------|-------|
|                      | Mean           | SD    | Mean                        | SD    | Median          | Min-max |       |       |
| Withdrawn            | 4.05           | 2.84  | 5.57                        | 3.56  | 5.00            | 0-14    | -1.94 | 0.053 |
| Somatic Complaints   | 1.22           | 1.67  | 2.75                        | 2.68  | 1.00            | 0-10    | -2.87 | 0.004 |
| Anxious/-Depressed   | 7.11           | 3.39  | 9.43                        | 5.36  | 7.00            | 0-20    | -2.08 | 0.038 |
| Social Problems      | 4.40           | 2.35  | 6.50                        | 2.53  | 5.00            | 0-12    | -3.63 | 0.000 |
| Thought Problems     | 1.94           | 1.61  | 3.11                        | 1.93  | 2.00            | 0-7     | -2.83 | 0.005 |
| Attention Problems   | 9.54           | 3.11  | 11.71                       | 3.55  | 10.00           | 3-19    | -2.83 | 0.005 |
| Delinquent Behaviors | 3.90           | 2.60  | 7.89                        | 3.63  | 5.00            | 0-16    | -4.96 | 0.000 |
| Aggressive Behaviors | 16.70          | 6.85  | 25.00                       | 9.08  | 18.00           | 1-39    | -3.95 | 0.000 |
| Sex Problems         | 0.65           | 1.17  | 1.00                        | 1.33  | 0.00            | 0-5     | -1.26 | 0.208 |
| Internalizing        | 12.16          | 5.54  | 17.29                       | 9.33  | 12.00           | 0-32    | -2.60 | 0.009 |
| Externalizing        | 20.60          | 8.53  | 32.89                       | 11.79 | 23.00           | 3-55    | -4.47 | 0.000 |
| Total Problem        | 55.08          | 18.27 | 81.21                       | 28.48 | 60.00           | 16-144  | -3.91 | 0.000 |

were diagnosed as ADHD alone and 28 subjects (30.4%) had ODD and/or CD as well. When ADHD subgroups were taken into account, it was observed that 68 subjects (73.9%) were the combined type, 14 subjects (15.2%) were the inattentive type and 10 subjects (10.9%) were the hyperactive-impulsive type. There were no significant differences between patients with or without ODD and/or CD according to distribution into ADHD subgroups ( $\chi^2=2.513$ ,  $p>0.05$ ). Distribution rates for patients with additional diagnoses were 78.6% ( $n=22$ ) for combined type, 7.1% ( $n=2$ ) for inattentive type and 14.3% ( $n=4$ ) for hyperactive-impulsive type. The same rates for subjects without comorbidities were 71.9% ( $n=46$ ) for combined type, 18.8% ( $n=12$ ) for inattentive type and 9.4% ( $n=6$ ) for hyperactive-impulsive type.

There were differences in CBCL scores of ADHD subjects with and without comorbidities in total and all subscale scores other than Withdrawn and Sex Problems ( $p<0.05$ ). ODD and/or CD comorbidities were rated significantly higher scores than ADHD only. Mean scores for CBCL subscales are presented in Table 2.

Parental ages did not differ between two groups ( $p>0.05$ ). When the groups were compared for family types, it was found that in the ADHD group, 87.5% ( $n=56$ ) of subjects were living in nuclear families, 7.8% ( $n=5$ ) of subjects were living in extended families and 4.7% ( $n=3$ ) of subjects were living with single parents. All children with ODD and/or CD comorbidities

were living in nuclear families. Two of these children (7.1%) were adopted.

In our country the relationship between level of income and education or job is not so strict and as a consequence, we only analyzed data of education and job. In the ADHD group, 54.7% of mothers ( $n=35$ ) were housewives and 31.3% ( $n=20$ ) were employed. In the ODD and/or CD comorbidity group, 50% of mothers ( $n=14$ ) were housewives and 39.3% ( $n=11$ ) were employed. In the ADHD group, 59.4% of fathers ( $n=38$ ) were employees and 28.1% ( $n=18$ ) were employers. In ODD and/or CD comorbidity group, 50% of fathers ( $n=14$ ) were employees and 32.1% ( $n=9$ ) were employers. When the groups were compared for parental level of education, there were no statistically significant differences ( $p>0.05$ ). It was concluded that families of the patients were in the medium socioeconomical level.

When current psychiatric illnesses of the families were evaluated, two problems were observed: depression in mothers and alcohol use disorders in fathers which were classified as alcohol abuse according to APA 1994 criteria. When the two groups were compared for these entities, parental depression and alcohol abuse rates were significantly higher in ADHD subjects with ODD and/or CD comorbidities ( $\chi^2=7.196$ ,  $p<0.05$ ).

FAD subscale scores of both groups are presented in Table 3. Scores of Roles and

**TABLE 3.** FAD Scores of Families of Children with ADHD or ADHD+ODD/CD.

|                          | ADHD<br>(n=63) |      | ADHD+<br>(ODD/CD)<br>(n=28) |      | Total<br>(n=91) |         |       |       |
|--------------------------|----------------|------|-----------------------------|------|-----------------|---------|-------|-------|
| Subscale Scores          | Mean           | SD   | Mean                        | SD   | Median          | Min-Max | Z     | p     |
| Problem Solving          | 1.77           | 0.60 | 2.03                        | 0.75 | 1.66            | 1-3.50  | -1.24 | 0.214 |
| Communication            | 1.74           | 0.52 | 1.88                        | 0.68 | 1.66            | 1-3.70  | -0.77 | 0.445 |
| Roles                    | 1.95           | 0.48 | 2.18                        | 0.57 | 1.95            | 1-3.45  | -1.97 | 0.049 |
| Affective Responsiveness | 1.61           | 0.53 | 1.75                        | 0.63 | 1.50            | 1-3.50  | -1.09 | 0.274 |
| Affective Involvement    | 2.03           | 0.49 | 2.05                        | 0.49 | 2.00            | 1-3.71  | -0.10 | 0.918 |
| Behavior Control         | 1.82           | 0.44 | 2.11                        | 0.59 | 1.77            | 1-3.50  | -2.23 | 0.026 |
| General Functions        | 1.70           | 0.51 | 1.98                        | 0.65 | 1.66            | 1-4.00  | -1.91 | 0.056 |

Behavioral Control subscales were significantly different between groups ( $p<0.05$ ). Patients with ODD and/or CD comorbidity had significantly higher scores which placed them in the unhealthy-functioning range.

### DISCUSSION

For disruptive behavioral disorders, risk factors about the child and psychosocial components are defined. Inherited/familial tendency, differences in neurochemistry and neuroanatomy, pre- and post-natal problems are considered as biological risk factors. Besides mood, temperamental characteristics and neuropsychiatric state of the child, some other components like intelligence, academic achievement, and social/moral development are evaluated as functional risk factors. On the other hand, psychosocial risk factors like parent and peer relations, socioeconomic state and coping skills were reported (Loeber et al. 2000). Generally researchers are focused on antisocial behaviours which include symptoms of ADHD, ODD and CD. It is emphasized that studies designed to differentiate risk factors are needed for diagnostic classification (Burke et al. 2002).

Majority of study population was male (78.3%). combined type ADHD included 73.9% of all subjects. These findings were consistent with those of previous studies (Biederman et al. 1998, Faraone and Biederman 1999). In our study, we found the incidence of ODD and/or CD comorbidity to be 30.4% which was a relatively low rate. This inconsistency may be due to the exclusion of subjects with Specific Learning Disorders, Affective Disorders and Anxiety Disorders which are seen frequently with ADHD.

The two groups of children which took part in this study were similar according to pregnancy and delivery characteristics or basic development stages like onset of talking and walking. They were similar according to ages and intelligence levels as well. When CBCL scores were evaluated, all categories other than Withdrawn and Sex problems were more problematic in children who had ODD and/or CD comorbidity besides ADHD. CBCL was not a scale based on DSM-IV, but it was able to differentiate children with or without disruptive behavioral disorders according to problematic behavioral aspects. The difference between the groups in "Externalizing scales" was not a surprise. But higher scores for "Internalizing scales" which were constituted by "Withdrawn", "Somatic Complaints" and "Anxious/Depressed" subscales in children who had ODD and/or CD comorbidity besides ADHD were interesting. The negative difference in children with ODD and/or CD besides ADHD were found to be due to scores of "Somatic Complaints" and "Anxious/Depressed" subscales.

It is well known that depression and anxiety disorders are more common in adolescence. It was reported that comorbidity of ADHD and disruptive behavioral disorders with secondary depression and anxiety disorders were higher in younger adults (Turgay 1997, Loeber et al. 2000). In order to provide the homogeneity of the study population, we excluded the children who were found to have anxiety and depression disorders besides ADHD after clinical interviews and psychometric measurements. As a result of CBCL scores, we concluded that subthreshold anxiety and depression symptoms were higher in patients with ODD and/or CD comorbidity

besides ADHD. As our study population included prepubertal children, it was thought that anxiety and depression incidences in adolescence would be expected to be higher in children with ODD and/or CD comorbidity besides ADHD.

Pekcanlar and colleagues found family functioning generally normal in children with ADHD (1999). But in the same study, control and communication problems were present in families of children with CD besides ADHD. Özcan and colleagues evaluated family functioning in children with and without ODD besides ADHD by using FAD (2003). They found significantly higher results in "Behavior Control" subscale in families of children with ODD comorbidity besides ADHD. These higher results meant unhealthy states. Similarly, we found higher results in "Roles" and "Behavior Control" subscales of FAD in families of children with ODD and/or CD comorbidity besides ADHD. The reason for the use of FAD was to get direct information from family members. We concluded that family members of children with ODD and/or CD comorbidity besides ADHD could not adequately perform their expected roles and put standards on or control behaviors of each other. On the basis of systematic approach, it may be thought that impairment on any function can affect others. But it is difficult to build up a causality relationship with this impairment in family functioning. To have a child who has a disruptive behavioral disorder besides ADHD is an additional burden for the family. Variables about parents who are another part of the system in deed, may affect family functioning as well. Nonetheless, some important findings of our study are relatively higher incidences of depression of mothers and alcohol use disorder of fathers of children with ODD and/or CD comorbidity besides ADHD.

Johnston and colleagues reported there were more negative-reactive and less positive parental strategies in families of children with ODD

comorbidity besides ADHD (1996). They found lower levels of self-confidence and higher incidences of psychiatric disorders in these parents as well. In a study in which psychosocial characteristics of families of Japanese children with ODD and/or CD comorbidity besides ADHD were evaluated, it was shown that interpersonal relations were more conflicting and less organised. Moreover, impairment of psychiatric health was more prominent in mothers of children with ODD and/or CD comorbidity besides ADHD (Satake et al. 2004). In another study which compared psychiatric disorders in parents of children who were between 3-7 years old with or without disruptive behavioral disorder besides ADHD, maternal mood disorders, anxiety disorders, and stimulant/cocaine dependence were found to be related with ODD and/or CD comorbidity. Alcohol use disorders in fathers of these children were more frequent as well (Chronis et al. 2003).

One of the limitations of this study is the combination of CD subjects with ODD subjects due to smaller number of children with CD. Parental psychopathology was not assessed and which may be accepted as another limitation of our study. The diagnoses of other psychiatrists were not confirmed by interviews or scales. Only medical histories could be used for this purpose. Consequently, as sociodemographic characteristics of families and many variables other than the presence ODD and/or CD comorbidity of children were similar, the differences in family functioning and parental psychopathologies were thought to be important. Parental/familial problems were found to be related with negative therapeutic responses and non-compliance (Hoza et al. 2000). As a conclusion, in the presence of disruptive behavioral disorders besides ADHD, therapeutic approaches directed towards parents and educational programs in order to increase parental skills should accompany treatment of children themselves.

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