Distress among parents of attention-deficit/hyperactivity-disorder children: relationship with children's symptom severity and behavioral disturbances

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Background
The symptoms and behaviors of children with attention-deficit/hyperactivity-disorder (ADHD) impose demands and difficulties on the part of their caring parents that may cause the latter group to suffer psychological stress.
Aim and objective
The aim of this work was to study the type and severity of symptoms in children with ADHD and their effect on the parents.
Patients and methods
Thirty-seven children with ADHD who were diagnosed clinically and using the Conners test were studied using the Child Behavior Checklist. The available parent for each child was interviewed and studied with the Symptom Checklist 90 Revised. Two control groups were used for both ADHD children and their parents.
Results
The mean age of the children with ADHD was 7.1±1.6 years. There were 22 male and 15 female patients. Parents of these children scored high on total and subscales of the Symptom Checklist 90 Revised. The scores were significantly higher than that in the control group on total and some of these subscales, including somatization, interpersonal, depression, paranoid ideation, and hostility domains. Depression and paranoid ideation of ADHD children parents were positively and significantly correlated with most of the subitems of the Conners test of their children. In addition, somatization, depression, and hostility of parents were positively and significantly correlated with most of the subitems of the Child Behavior Checklist of their ADHD children.
Conclusion
Symptoms, behaviors, and severity of illness of children with ADHD have a great impact on their parents' psychological state, suffering, and distress.

Keywords:
attention-deficit/hyperactivity-disorder, children, distress, parents

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Introduction

Attention-deficit/hyperactivity-disorder (ADHD) is the most common mental health disorder among young children (American Psychiatric Association, 2000). Approximately 3–5% of children suffer from the disorder, which is characterized by attention deficiencies, hyperactivity, and impulsiveness, but often children with ADHD also suffer from comorbidities and learning problems (Child and Youth Psychiatric Society, 2008).

ADHD has an enormous impact on the child's life in terms of accumulation of human capital such as grade repetition, mathematics scores, reading scores, and special education (Currie and Stabile, 2006), disturbed peer relationships, and low self-esteem (Wehmeier *et al.*, 2010).

Moreover, the disorder seems to influence siblings (Currie and Stabile, 2006; Fletcher and Wolfe, 2008) and classmates negatively (Aizer, 2009).

What has only received little attention so far is to what extent the disorder affects the outcomes of parents. However, there are many reasons why children with ADHD may affect parental outcomes.

The arrival of a disabled child can be seen as an unanticipated shock to the parenteral relationship. This incidence may lead to conflicts that challenge

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the parents' relationship, thereby imposing higher psychic costs on the parents than in families without a child affected by ADHD (Wehmeier *et al.*, 2010).

Moreover, a child with ADHD may also affect the parents' time allocation by requiring enhanced time investment due to more need for guidance in daily activities compared with a child without ADHD (Green *et al.*, 2005). To cope with the increased caregiving burden and the higher time demand, both parents may cut back on working hours. However, having a child with ADHD may also affect the parents' relationship positively by bringing the family closer together (Reichman *et al.*, 2004).

For parents, there are various challenges accompanying the presence of an ADHD child: financial burden of expensive medications being prescribed, special schooling being required, social stress from trying to gain acceptance or avoid blame related to stigma of any form of abnormal behavior, and relationship stress related to difficulties associated with imposing a daily routine and discipline on the ADHD child (Austin and Carpenter, 2008).

Patients and methods

The study was conducted in the Child Psychiatry Outpatient Clinic, Minia Psychiatry Hospital, Minia, Egypt. The study was approved by the Ethical Research Committee in Minia faculty of medicine.

Thirty-seven children with ADHD who were diagnosed clinically and using the Conners Parent Rating Scale (CPRS) Revised were assessed using the Child Behavior Checklist (CBCL).

The available parent for each child was interviewed and assessed with the Symptom CheckList 90 Revised (SCL90R).

Two control groups were used for both ADHD children (37 children) and their parents.

Tools of the study

Conners' Parent Rating Scales Revised

It is an assessment for children aged 3 through 17 years designed to measure cognitive, behavioral, and emotional problems from the perspective of teachers and parents (Conners *et al.*, 1998).

The long version of the CPRS Revised is based on the *Diagnostic and Statistical Manual of Mental Disorders*, 4th ed. (DSM-IV) symptoms linked to ADHD and comorbid disorders.

Items are related to internalizing and externalizing behaviors representing problem behaviors.

The CPRS-R long version includes 80 items in the following subscales: oppositional, social problems, cognitive problems, inattention, psychosomatic, hyperactivity, anxious-shy, perfectionism, liability, and impulsivity.

Test scores were interpreted as follows: 0–55 was considered as normal, 56–60 as slight ADHD, 61–65 as mild ADHD, and 66–90 as significant ADHD.

The Child Behavior Checklist/4–18

The CBCL/4–18 (Achenbach, 1991) was completed by parents to determine the presence or absence of emotional and behavioral problems.

The CBCL/4–16 was renormed to include children up to 18 years of age (becoming CBCL/4–18), and eight cross-informant constructs were identified to facilitate direct comparison between problem behavior scores on the CBCL, the Teacher Report Form, and the Youth Self-Report Form (Achenbach, 1991).

It measures the following eight constructs or syndromes: Social Withdrawal, Somatic Complaints, Anxiety/Depression, Social Problems, Thought Problems, Attention Problems, Delinquent Behavior, and Aggressive Behavior (Achenbach, 1991).

In addition to focusing on a child's behavior, it also allows the examination of two broad groupings of syndromes: internalizing problems and externalizing problems.

Internalizing problems include the Social Withdrawal, Somatic Complaints, and Anxiety/Depression scales.

Externalizing problems include the Delinquent Behavior and Aggressive Behavior scales (Achenbach, 1991).

Symptom Checklist 90 Revised

Parents of both groups were screened for a probable psychiatric morbidity using the SCL90R (Derogatis and Savitz, 2000), the Arabic version (El Behery, 1984).

The SCL90R is a 90-item, single page, self-administered questionnaire and can usually be completed in 10–15 min. It is intended for use as a quick screening instrument, to

measure the outcome or status of psychopathology, for quantification of current psychopathology, and along nine primary symptom dimensions: somatization, obsessive–compulsive symptoms, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticism (Derogatis and Savitz, 2000).

Three global indexes are also calculated.

(1) Global Severity Index.
(2) Positive Symptom Total.
(3) Positive Symptom Distress Index.

Results

Table 1 shows the comparison between cases and control children as regards sociodemographic data. There was no statistically significant difference between the groups except in education, where ADHD children had a significantly higher rate of not being in school ($P<0.001$).

Table 2 shows that parents of ADHD children and parents of the control children did not differ except in occupation; the former were more frequently unemployed compared with the latter and the difference was statistically significant ($P=0.01$).

Table 3 demonstrates the comparison between parents of ADHD and parents of control children as regards the SCL90R. There was a statistically significant difference in somatization, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and additional ($P<0.0001$, 0.001, <0.0001, 0.003, <0.0001, <0.0001, 0.001, and <0.0001, respectively).

Table 4 shows the first part of the correlation between the domains of the SCL90R for parents of ADHD with the domains of the CPRS for their children. There were positive and significant correlations between depression and paranoid ideation of the parent group and all domains of the Conners test of their children. However, a negative and significant correlation was found between the somatization domain of the SCL90R of parents and hyperactivity and social problems of their children as measured using the Conners test ($P=0.04$ and 0.01, respectively).

Table 5 shows that there was a negative correlation between interpersonal sensitivity and phobic anxiety

Table 1 Sociodemographic characteristics of the attention-deficit/hyperactivity-disorder and control groups of children

Sociodemographic data of children	ADHD children ($N=37$) [n (%)]	Control children ($N=37$) [n (%)]	P
Age (years)	7.1±1.6	6.6±2.1	0.3
Sex			
Male	22 (59.5)	28 (75.7)	0.1
Female	15 (40.5)	9 (24.3)	
Residence			
Urban	17 (45.9)	21 (56.8)	0.3
Rural	20 (54.1)	16 (43.2)	
Education			
Currently in school	20 (54.1)	34 (91.9)	**<0.001**
Currently not in school	17 (45.9)	3 (8.1)	

ADHD, attention-deficit/hyperactivity-disorder. Bold values mean statistically significant.

Table 2 Sociodemographic characteristics of the groups of parents of attention-deficit/hyperactivity-disorder and parents of control children

Sociodemographic of parents	Parents of ADHD children [n (%)]	Parents of control children [n (%)]	P
Age (years)	36±6.2	37.6±4.9	0.2
Sex			
Male	12 (32.4)	11 (29.7)	0.8
Female	25 (67.6)	26 (70.3)	
Residence			
Urban	17 (45.9)	21 (56.8)	0.3
Rural	20 (54.1)	16 (43.2)	
Occupation			
Employed	16 (43.2)	27 (73)	**0.01**
Unemployed	21 (56.8)	10 (27)	

ADHD, attention-deficit/hyperactivity-disorder. Bold values mean statistically significant.

Table 3 Comparison between parents of attention-deficit/hyperactivity-disorder and parents of control children as regards the Symptom Checklist 90 Revised

SCL90 R	Parents of the ADHD group		Parents of the control group		*P*
	Mean	SD	Mean	SD	
Additional	6.59	5.32	9.10	4.73	0.035
Psychoticism	6.32	6.33	6.72	4.08	0.745
Paranoid ideation	8.05	5.04	8.13	4.35	0.941
Phobic anxiety	7.05	8.67	4.56	5.09	0.137
Hostility	5.43	5.50	6.40	5.69	0.457
Anxiety	7.13	5.61	6.10	4.70	0.397
Depression	8.21	6.08	16.13	9.00	0.0001
Interpersonal sensitivity	6.78	6.54	10.64	6.25	0.011
OCD	7.89	3.07	10.40	5.52	0.018
Somatization	25.37	10.17	6.83	5.96	0.0001

ADHD, attention-deficit/hyperactivity-disorder; OCD, obsessive–compulsive disorder; SCL90R, Symptom Checklist 90 Revised.

Table 4 Correlation between the Symptom Checklist 90 Revised of parents and scores of the Child Behavior Checklist test of attention-deficit/hyperactivity-disorder children

SCL90R parents	Conners Rating Scale					
	Oppositional	Cognitive problems	Hyperactivity	Anxious-Shy	Perfectionism	Social problems
Somatization						
r	0.04	0.00	**–0.3**	–0.1	–0.2	**–0.4**
P	0.8	1.00	**0.04**	0.7	0.3	**0.01**
OCD						
r	0.12	0.20	0.11	0.10	0.19	0.15
P	0.31	0.08	0.37	0.38	0.11	0.19
Interpersonal						
r	0.01	–0.1	–0.05	–0.1	–0.3	0.1
P	0.9	0.5	0.7	0.5	0.1	0.5
Depression						
r	0.69	0.65	0.66	0.61	0.63	0.65
P	**0.0001**	**0.0001**	**0.0001**	**0.0001**	**0.0001**	**0.0001**
Anxiety						
r	–0.1	–0.2	0.2	0.3	0.2	0.3
P	0.6	0.3	0.3	0.1	0.1	0.1
Hostility						
r	0.2	0.2	–0.1	0.02	0.02	0.01
P	0.3	0.3	0.4	0.9	0.9	0.9
Phobic anxiety						
r	–0.2	–0.1	0.2	0.1	0.1	0.01
P	0.2	0.4	0.3	0.7	0.7	0.9
Paranoid ideation						
r	0.34	0.28	0.31	0.28	0.36	0.39
P	**0.003**	**0.02**	**0.01**	**0.02**	**0.01**	**0.001**
Psychoticism						
r	–0.01	–0.17	–0.22	–0.18	–0.14	–0.12
P	0.41	0.15	0.05	0.13	0.23	0.30
Additional						
r	0.2	–0.02	0.2	0.2	0.2	0.01
P	0.3	0.9	0.2	0.3	0.3	0.9

OCD, obsessive–compulsive disorder; SCL90R, Symptom Checklist 90 Revised. Bold values mean statistically significant.

of parents with hyperactivity/impulsivity of their children (*P*=0.04 and 0.03, respectively). Obsessive–compulsive disorder domain in parents had a positive correlation with combined domain of Conners' test (hyperactivity impulsivity and inattention) (*P*=0.032).

Table 6 shows the first part of the correlation between the domains of the SCL90R of ADHD parents and the domains of the CBCL of their children. There was a positive and significant correlation between somatization, depression, hostility, phobic anxiety, and additional symptom domains of the SCL90R

Table 5 Correlation between the Symptom Checklist 90 Revised of parents and the Conners test of attention-deficit/hyperactivity-disorder children

SCL90R parents	Conners Rating Scale				
	Psychosomatic	Emotional liability	Inattention	Hyperact. impulsivity	Combined
Somatization					
r	–0.3	–0.3	–0.03	–0.2	–0.1
P	0.1	0.1	0.8	0.3	0.4
OCD					
r	0.20	0.08	0.07	0.21	0.25
P	0.08	0.51	0.55	0.07	**0.03**
Interpersonal					
r	0.1	–0.2	–0.1	**–0.3**	0.1
P	0.5	0.2	0.4	**0.04**	0.7
Depression					
r	0.71	0.71	0.64	0.71	0.64
P	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Anxiety					
r	–0.05	0.2	0.1	–0.1	–0.04
P	0.8	0.3	0.5	0.5	0.8
Hostility					
r	0.2	0.1	–0.2	0.1	0.2
P	0.3	0.4	0.1	0.4	0.3
Phobic anxiety					
r	0.3	–0.1	–0.1	**–0.4**	0.2
P	0.1	0.7	0.7	**0.03**	0.2
Paranoid ideation					
r	0.32	0.32	0.30	0.33	0.32
P	**0.005**	**0.005**	**0.01**	**0.004**	**0.01**
Psychoticism					
r	–0.16	–0.20	–0.20	–0.07	–0.20
P	0.16	0.08	0.08	0.54	0.08
Additional					
r	0.2	0.1	–0.1	–0.1	0.2
P	0.3	0.4	0.5	0.5	0.3

OCD, obsessive–compulsive disorder; SCL90R, Symptom Checklist 90 Revised. Bold values mean statistically significant.

and all domains of the CBCL. Interpersonal sensitivity and paranoid ideation were also positively and significantly correlated to most of the domains of the CBCL. However, a significant but negative correlation was found between psychoticism of parents and the somatic and thought problem domains of their children (P=0.02).

Table 7 shows the second part of the correlation between domains of the SCL90R of ADHD parents and the domains of the CBCL of their children. There was a continued positive correlation between somatization, depression, hostility, phobic anxiety, and additional with all domains of the CBCL of children sample. In addition, paranoid ideation showed a positive correlation with all domains of the CBCL except the internalizing and others. Obsessive–compulsive disorder of parents showed a positive and significant correlation with aggression of their ADHD children. Interpersonal sensitivity of parents was positively and significantly correlated with externalizing behavior of their children (aggression and delinquent behavior, P=0.000 and 0.035, respectively).

Discussion

ADHD is a pervasive and debilitating condition affecting many aspects of the individual's life – namely, academic life (DuPaul *et al.*, 2001), social skills (Bagwell *et al.*, 2001), and parent–child relationships (Johnston and Mash, 2001). Compared with normal children, children with ADHD are more likely to have families that are characterized by significant conflicts (Cunningham *et al.*, 1988), marital discord, and parental psychopathology (Hechtman, 1996). The difficulties are aggravated by the presence of comorbid conditions in more than half of the children with ADHD (Biederman *et al.*, 1991), including severe behavioral and emotional disorders (Jensen *et al.*, 2001).

The present study included 37 ADHD children with a mean age of 7.1 years and 37 healthy control children with a mean age of 6.6 years; male sex was predominant in both groups. As regards education, 54.1% of ADHD

Table 6 Correlation between the Symptom Checklist 90 Revised of parents and the Child Behavior Checklist of attention-deficit/hyperactivity-disorder children

SCL90R of parents	CBCL				
	Internalizing		Social	Somatic	Thought
	Withdrawn	Anxious–depression			
Somatization					
r	**0.40**	**0.39**	**0.47**	**0.43**	**0.43**
P	**0.0001**	**0.001**	**0.0001**	**0.0001**	**0.0001**
OCD					
r	0.17	–0.10	0.13	0.09	0.09
P	0.14	0.39	0.37	0.46	0.46
Interpersonal sensitivity					
r	**0.35**	0.06	**0.31**	**0.22**	**0.22**
P	**0.002**	0.63	**0.01**	**0.05**	**0.05**
Depression					
r	**0.34**	**0.25**	**0.64**	**0.52**	**0.52**
P	**0.001**	**0.030**	**0.0001**	**0.0001**	**0.0001**
Anxiety					
r	0.07	0.17	0.10	**0.28**	**0.28**
P	0.555	0.147	0.377	**0.015**	**0.015**
Hostility					
r	**0.403**	**0.371**	**0.389**	**0.499**	**0.499**
P	**0.0001**	**0.001**	**0.001**	**0.0001**	**0.0001**
Phobic anxiety					
r	**0.45**	**0.27**	**0.56**	**0.48**	**0.48**
P	**0.0001**	**0.019**	**0.0001**	**0.0001**	**0.0001**
Paranoid ideation					
r	0.198	**0.23**	**0.28**	**0.35**	**0.35**
P	0.091	**0.045**	**0.017**	**0.002**	**0.002**
Psychoticism					
r	–0.198	–0.161	–0.021	**–0.27**	**–0.27**
P	0.090	0.170	0.857	**0.02**	**0.02**
Additional					
r	**0.28**	**0.28**	**0.35**	**0.45**	**0.45**
P	**0.015**	**0.017**	**0.002**	**0.0001**	**0.0001**

CBCL, Child Behavior Checklist; OCD, obsessive–compulsive disorder; SCL90R, Symptom Checklist 90 Revised. Bold values mean statistically significant.

children were in school at the time of the study compared with 91.9% of control children ($P<0.001$). This is in agreement with the findings of DuPaul *et al.* (2001), who suggested that ADHD children had a significant risk for academic difficulties relative to their normal counterparts. This might be attributed to poor school performance and underachievement due to hyperactivity and impulsive behaviors (Loe and Feldman, 2006).

Parents of ADHD children had significantly poorer occupational functioning compared with parents of the control group, as 56.8% of parents of ADHD children were unemployed in comparison with only 27% of parents of the control group. This is in agreement with the findings of Coghill *et al.* (2008) and Yousefia *et al.* (2011), who suggested that parents of ADHD children suffer a significant burden, resulting in reduced work productivity.

This could be attributed to the fact that almost two-thirds of parents in both groups were mothers. Mothers of ADHD children had difficulty in going out and being regular to work because of the time and effort required in taking care of their children. This is in line with the findings of Wiener *et al.* (2016), who reported that mothers, but not fathers, of ADHD patients had high levels of parenting stress and were more prone than other mothers to feel social isolation, incompetence, and unsatisfying and conflicting relationships with their spouses/partners.

On the basis of the CPRS, ADHD children showed higher scores compared with control children in all subscales of the test ($P<0.0001$). Soliman *et al.* (2010) reported similarly on a sample of school children with ADHD, but used the teacher version of Conners and not the parent version that was used in the current study.

Table 7 Correlation between the Symptom Checklist 90 Revised of parents and the Child Behavior Checklist of attention-deficit/hyperactivity-disorder children

SCL90R of parents	Attention	Externalizing		Others
		Aggression	Delinquent	
Somatization				
r	**0.465**	**0.363**	**0.406**	**0.461**
P	**0.0001**	**0.001**	**0.0001**	**0.0001**
OCD				
r	0.063	**0.280**	0.079	0.023
P	0.592	**0.016**	0.505	0.847
Interpersonal sensitivity				
r	0.196	**0.407**	**0.246**	0.049
P	0.094	**0.000**	**0.035**	0.680
Depression				
r	**0.472**	**0.434**	**0.611**	**0.466**
P	**0.0001**	**0.0001**	**0.0001**	**0.0001**
Anxiety				
r	0.061	0.044	0.171	0.031
P	0.607	0.711	0.144	0.791
Hostility				
r	**0.376**	**0.305**	**0.511**	**0.370**
P	**0.001**	**0.008**	**0.0001**	**0.001**
Phobic anxiety				
r	**0.432**	**0.466**	**0.489**	**0.361**
P	**0.0001**	**0.0001**	**0.0001**	**0.002**
Paranoid ideation				
r	**0.21**	**0.23**	**0.33**	0.19
P	**0.075**	**0.049**	**0.004**	0.108
Psychoticism				
r	−0.18	−0.02	−0.17	−0.05
P	0.132	0.858	0.143	0.678
Additional				
r	**0.30**	**0.31**	**0.48**	**0.35**
P	**0.009**	**0.007**	**0.0001**	**0.002**

OCD, obsessive–compulsive disorder; SCL90R, Symptom Checklist 90 Revised. Bold values mean statistically significant.

On the basis of the CBCL, comparison of ADHD children with their control group showed significantly higher figures of behavioral disturbance in all domains ($P<0.0001$ for all comparisons). These significantly higher disturbed behaviors in ADHD children might lead to more burden placed on the parents of such children.

Our CBCL results are in agreement with those of Coghill *et al.* (2008), who reported that ADHD children consistently displayed more disturbed behavior compared with control children.

In addition, ADHD children of our sample showed more internalizing behaviors compared with their controls in the form of withdrawal and anxious–depression tendency. This is in agreement with the findings of Treuting and Hinshaw (2001), who reported that ADHD children became frustrated more easily compared with their peers or normal children and have low self-esteem, which makes them more prone to depression.

Moreover, ADHD children showed more disturbances in their social relations. This is in agreement with the findings of Carpenter *et al.* (2009), who reported social immaturity and peer rejection in ADHD children.

ADHD children showed higher figures in externalizing behavior (as aggression) according to the CBCL compared with control children. This is in agreement with the findings of Abikoff *et al.* (2002), who reported that ADHD children were either destructive or aggressive toward themselves and/or others.

As regards delinquent behavior, ADHD children of our study showed significantly higher figures compared with control children. Sibley *et al.* (2011) reported similarly that ADHD children had several delinquent behaviors, including symptoms of oppositional defiant and conduct disorders. However, the study by Sibley *et al.* (2011) had a larger sample (283 children) compared with ours.

Parents of ADHD children showed significantly higher figures of psychological disturbance in all domains of the SCL90R in comparison with parents of control children ($P<0.0001$ for all domains). This might be attributed to the impact of having an ADHD child on the parent's psychological status. Our results are in agreement with those previously reported by Spratt *et al.* (2007), who reported that mental health of mothers and families of children with ADHD were hugely affected by the illness of their children in comparison with the control group.

In addition, these results are in agreement with those of Coghill *et al.* (2008), who concluded that ADHD would adversely impact parent's quality of life. They also reported that a substantial burden is placed on family as a whole and on parents of ADHD children in particular in comparison with families and parents of control children.

Yousefia *et al.* (2011) studied only depression and anxiety in parents of ADHD children, and reported higher figures for this group compared with parents of the control group. However, they did not test other psychological elements in their sample of parents as they used the Beck Depression Inventory and State-Trait Anxiety Inventory and not the SCL90R as in case of our study.

In agreement with the findings of Kashdan *et al.* (2004), depression in parents of ADHD children (as measured using the SCL90R) was positively and significantly correlated with all domains of Conners ADHD symptoms ($P=0.0001$).

Distress among parents of ADHD children may be attributed to the conclusion made by Segenreich *et al.* (2009), who concluded that families of ADHD children have harder times as they have a composite problem; they have their own symptoms of depression and anxiety and they struggle to balance that problem with those of their children with ADHD.

This seems to be the case concerning parents of our ADHD children as they turned out to have a high degree of psychological suffering in addition to the disturbing symptoms and behaviors displayed by their ADHD children.

Moreover, hyperactivity and social problems of ADHD children were significantly correlated with somatization in their parents ($P=0.04$ and 0.01, respectively). This means that these parents not only suffered explicit psychological symptoms but also displayed suffering on the level of somatic manifestations. This is in agreement with the findings of Sandberg (2002), who reported that there was a relation between hyperactivity of ADHD children and psychopathology in their parents, such as alcoholism, somatization, and antisocial personality.

Furthermore, paranoid ideation of parents of ADHD children in our study was positively and significantly correlated with all domains of the Conners test of their children. Steinhausen *et al.* (2013) reported similarly, as their sample of ADHD parents had greater psychological disturbance as regards paranoid ideation and psychoticism versus control parents of normal children.

We found obsessive–compulsive symptoms in parents of ADHD children that were positively and significantly correlated with hyperactivity, inattention, and aggression in their children. Steinhausen *et al.* (2013) reported similarly that parents of ADHD children suffered from several psychological disturbances such as obsessive–compulsive behaviors that were correlated to hyperactivity and inattention symptoms of their children.

In addition, parental somatization, depression, phobic anxiety, interpersonal sensitivity, and hostility were found to be significantly correlated with scores of the CBCL of their children ($P=0.0001$). Similar results were obtained by Coghill *et al.* (2008), who reported that parents of ADHD children showed more disturbed interpersonal relationships, greater conflict, and depression compared with parents of normal control children.

Chi and Hinshaw (2002) reported that mothers of ADHD children showed symptoms of depression in comparison with mothers of control children. The comparisons made in our study were, however, between patents in general and not mothers in particular.

Thought problems of ADHD children in our study were significantly correlated with anxiety of their parents ($P=0.05$). Xia *et al.* (2015) reported similarly that ADHD children with hyperactivity and thought problems impacted negatively on their parents in the form of anxiety symptoms.

Podolski and Nigg (2001) reported that parenting role distress was associated uniquely with child oppositional or aggressive behaviors. In our study, there was a positive and significant correlation

between interpersonal sensitivity of parents of ADHD children and their thought problems and externalizing problems such as aggression and delinquent behaviors of their children (P=0.05 and 0.03, respectively). Child co-occurring conduct problems and parental depressive symptomatology predicted parenting stress (Theule *et al.*, 2013).

The careful review of our results may lead us to agree with Johnston and Mash (2001), who suggested that the presence of ADHD in children is associated to varying degrees with disrupted parent–child relationships, and increased levels of parenting stress and parental psychopathology.

Conclusion

(1) The symptoms, behavior, and severity of illness of children with ADHD have a great impact on their parents' psychological state, suffering, and distress.
(2) There were significant differences between parents of ADHD children and parents of control children as regards different psychiatric dimensions such as somatization, anxiety, phobic anxiety, depression, and psychoticism.

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