

Comparison of Depression and Burnout Levels of Mothers of Children with Attention-Deficit Hyperactivity Disorder Before and After Treatment

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Abstract

Objective: This study aimed to compare the depression and burnout levels of mothers of children having attention-deficit/hyperactivity disorder (ADHD) between the child's pre- and posttreatment periods.

Method: The study sample consisted of 40 children aged between 4 and 10 years and their mothers. Initially, 40 cases participated, but during the follow-up, 19 cases dropped out. The Beck Depression Inventory (BDI), the Maslach Burnout Inventory (MBI), and the Turgay DSM-IV Based Child and Adolescent Behaviour Disorders Screening and Rating Scale (T-DSM-IV-S) were used.

Results: Among the mothers, posttreatment BDI scores, MBI-emotional exhaustion, and personal accomplishment were significantly lower than the pretreatment scores. In the treatment's second month, all T-DSM-IV-S subscale scores showed a statistically significant decrease.

Conclusions: It was concluded that treatment of children with ADHD would have a favorable impact on their mothers' depressive symptoms, which would consequently decrease negative parental attitudes, hence reducing the risk of behavioral disorder in children with ADHD and exerting a positive effect on their treatment.

Keywords: ADHD, child psychiatry, depression, burnout

Introduction

ATTENTION-DEFICIT/HYPERACTIVITY DISORDER (ADHD) is an early onset neuropsychiatric disorder affecting children; it is characterized by hyperactivity, attention problems, and impulsivity. Its prevalence in children is 3%–5% (Spetic and Arnold 2007). Parenting an ADHD child increases risk for parenting difficulties. Problems in parent–child interactions, marital relationships, family functioning, and parental adjustment are common in some, although certainly not all, families of children with ADHD. Children with ADHD are reported to be less cooperative and more negative (Befera and Barkley 1985) and their parents experience social problems associated with the disruptive behavior of these children in different environments (Cunningham 2007). Therefore, parents of children with ADHD tend to have higher levels of stress while bringing up their children and need to be more patient (Johnston and Mash 2001). In addition, it has also been reported that in the families of children with ADHD, there is a variable degree of marital and parental dysfunction, a decrease in parental self-esteem, and a disturbed relationship between parents and children, which is associated with an increased psychopathological picture of the parents (Johnston and Mash 2001). It was also established that mothers of children with ADHD showed higher number of depression symptoms and that depression in the mother was also a

predictor of the development of children's depression and behavioral disorders in the future (Befera and Barkley 1985; Chronis et al. 2006). In Befera and Barkley's study, it was shown that depression symptoms are more marked in the mothers of children with ADHD (Befera and Barkley 1985).

This study aimed to compare the levels of depression and burnout of mothers of children with ADHD at the onset of the treatment and 2 months after treatment. To our knowledge, there exist few follow-up studies in the literature available that evaluate the effect of ADHD treatment on mothers' depression and burnout levels. Furthermore, this is the first such study conducted in Turkey.

Methods

Participants

The study sample comprised 40 mothers and their children; the children were referred to Gaziantep University Child Psychiatry Outpatient Clinic between November 2013 and April 2014 and diagnosed with ADHD according to Diagnostic and Statistical Manual of Mental Disorders, 4th ed., Text Revision (DSM-IV-TR) (American Psychiatric Association, 2000) criteria. The inclusion criteria were as follows: for the children, being between ages 4 and 10, meeting ADHD criteria severe enough to require treatment,

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consenting to participate and for the mothers, and having a high enough level of education to fill the scales. Children with mental retardation and chronic physical disorders (epilepsy, cancer, etc.) were excluded from the study. At the beginning of the study, 40 cases were enrolled and as 19 cases did not come to control visits in the second month, the study was completed with 21 cases.

Study measures and tools

The Beck Depression Inventory (BDI) was used to measure depression levels in the mothers of children diagnosed with ADHD, the Maslach Burnout Inventory (MBI) was used to measure burnout levels, and the Turgay DSM-IV Based Child and Adolescent Behaviour Disorders Screening and Rating Scale (T-DSM-IV-S) was filled to discern the severity of ADHD in children.

Ergin (1992) translated the MBI into Turkish and conducted a pilot administration with a group of 235, including representatives of professional groups such as physicians, nurses, teachers, lawyers, police officers, and public servants (Ergin 1992). Duygun and Sezgin (2003) conducted a study of mothers of children with mental disabilities, establishing a Turkish form of the MBI, including two factors as emotional exhaustion and personal accomplishment. In this sample, the depersonalization subscale items were incorporated into emotional exhaustion. The first factor, termed emotional exhaustion, includes 13 items (1, 2, 3, 5, 6, 8, 10, 11, 13, 14, 16, 20, 22), whereas the second factor, termed personal accomplishment, includes 8 items (4, 7, 9, 12, 17, 18, 19, 21) (Duygun and Sezgin 2003). For attention-deficit and disruptive behavior disorders, the Turgay DSM-IV-S inventory was developed, including 9 items related to attention deficit, 9 items related to hyperactivity, 3 items related to impulsivity, 8 items related to oppositional defiant disorder (ODD), and 15 items related to conduct disorder (CD) (Turgay 1994). This scale was developed by transforming DSM-IV criteria into a questionnaire format such that there was no change in meaning. It was completed by the parents and teachers of children in whom ADHD is considered to exist. For each item, the options are as follows: 0 = absent, 1 = low, 2 = high, 3 = very high.

The BDI was developed by Beck in 1961 and a reliability and validity study for the inventory in Turkish was created by Tegin (1980) and Hisli (1988). It includes 21 items related to pessimism, feeling of failure, dissatisfaction, feelings of guilt, restlessness, fatigue, lack of appetite, indecision, sleep disorder, and social withdrawal. Each item is scored on a Likert scale.

Ethical considerations

Approval was obtained from Gaziantep University ethics committee, with protocol number 10.2013/333. Before the study, written informed consent was obtained from the children with ADHD and their mothers.

Statistical analyses

The normality of distribution of continuous variables was tested by Shapiro Wilk test. Student's *t*-test was used for comparison of two independent groups of variables with a normal distribution and Mann-Whitney *U* test was used when data do not have normal distribution. Dependent and normally distributed data were analyzed with the paired sample *t*-test and independent and data with other distributions were analyzed with the Wilcoxon test. Descriptive statistical parameters were presented as frequency, percentage (%), and mean \pm standard deviation. Statistical analysis was performed with

SPSS for Windows version 22.0 and a *p*-value <0.05 was accepted as statistically significant.

Results

The mothers of 21 of the original 40 children who underwent baseline evaluation completed 8 weeks of follow-up study. The mean age of the children with ADHD included in the study was 6.80 ± 1.43 years, whereas that of their mothers was 34.3 ± 5.76 years. The sociodemographic characteristics of children with ADHD and their mothers are shown in Table 1. Comparison of the completer group and drop-out group sociodemographic data is shown in Table 2.

Clinical characteristics of patients

Of the 21 children, 15 (72%) were administered methylphenidate, 3 (14%) atomoxetine, and 3 (14%) risperidone. Five (23%) children with ADHD had no comorbid disorders, and 16 (77%) had at least one comorbid psychiatric disorder. These disorders were CD and ODD (57%, $n = 12$), externalization disorders (23%, $n = 5$), and anxiety disorder (14.2%, $n = 3$).

Relationship between investigations and sociodemographic characteristics

In mothers, the posttreatment BDI scores and MBI emotional exhaustion (MBI-EE) and personal accomplishment subscale scores were found to be significantly lower than the pretreatment levels. In the second month of treatment, a statistically significant decrease was observed in all subscale scores of T-DSM-IV-S, as shown in Table 3.

In the correlation analysis between T-DSM-IV and the mothers' scores in the BDI and MBI scales, no significant relationship was found between the decrease in hyperactivity and attention-deficit subscales. Furthermore, a significant correlation was found between the decrease in MBI-EE scores and T-DSM-IV-S CD ($r = 0.496$ and $p = 0.022$) and oppositional defiance disorder scores ($r = 0.505$ and $p = 0.020$) and between the decrease in the mothers' BDI scores and decrease in CD subscale of T-DSM-IV-S ($r = 0.476$ and $p = 0.029$).

There is no statistically significant difference between completer and drop-out group scores in all scales. (Table 4)

TABLE 1. SOCIODEMOGRAPHIC DATA OF CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER AND THEIR MOTHERS

| | n | % |
|--------------------|----|-------|
| Child | | |
| Gender | | |
| Girl | 6 | 28.5 |
| Boy | 15 | 71.5 |
| Mother | | |
| Educational status | | |
| Primary school | 9 | 42.9 |
| Secondary school | 5 | 23.8 |
| High school | 2 | 9.5 |
| University | 5 | 23.8 |
| Employment status | | |
| Employed | 4 | 19.05 |
| Unemployed | 17 | 80.95 |
| Income level | | |
| High | 5 | 23.8 |
| Moderate | 14 | 66.7 |
| Low | 2 | 9.5 |

TABLE 2. COMPARISON WITH SOCIODEMOGRAPHIC DATA OF DROP-OUT AND COMPLETER GROUP

| | Completer | | Drop-out | | p |
|--------------------|-----------|-------|----------|------|-------|
| | n | % | n | % | |
| Mother | | | | | |
| Educational status | | | | | |
| Primary school | 9 | 42.9 | 7 | 36.8 | 0.562 |
| Secondary school | 5 | 23.8 | 4 | 21.1 | |
| High school | 2 | 9.5 | 5 | 26.3 | |
| University | 5 | 23.8 | 3 | 15.8 | |
| Employment status | | | | | |
| Employed | 4 | 19.05 | 3 | 15.8 | 0.787 |
| Unemployed | 17 | 80.95 | 16 | 84.2 | |
| Income level | | | | | |
| High | 5 | 23.8 | 4 | 21.1 | 0.594 |
| Moderate | 14 | 66.7 | 11 | 57.8 | |
| Low | 2 | 9.5 | 4 | 21.1 | |

Discussion

In this study, results indicated that posttreatment, T-DSM-IV-S scores decreased in all children with ADHD. Moreover, the results also determined that the emotional exhaustion and personal accomplishment subscale scores of mothers in MBI decreased in the second month of treatment. Furthermore, depression scores were observed to improve in the second month. Although there have been various studies on depression and burnout levels in the parents of children with ADHD, there are follow-up studies investigating the extent to which parents improve with their children's treatment. This study is also such a follow-up study. In a follow-up study by Kim et al., children with ADHD and their mothers were evaluated at the onset of treatment and at the third month of treatment. It was established that methylphenidate treatment positively affected children's academic functions and behavioral symptoms and improved parents' stress and mood (Kim et al. 2013). The results of this study are consistent with these observations. In another follow-up study evaluating factors predicting decrease in parents' stress level, it was demonstrated that comorbid ODD and CD scores and hyperactivity-impulsivity scores comorbid with ADHD do not predict baseline scores in the parenting stress index short form (PSI-SF) and changes in it, whereas attention deficit is a predictor

TABLE 3. COMPARISON OF PRE- AND POSTTREATMENT SCORES IN SCALES

| Scales | First form | Second form | p |
|---------------------------------|--------------|--------------|-------|
| BDI | 14.52 ± 7.73 | 10.47 ± 6.53 | 0.025 |
| MBI emotional exhaustion | 18.3 ± 10.65 | 13.09 ± 9.51 | 0.00 |
| MBI personal accomplishment | 9.6 ± 5.25 | 7.19 ± 4.78 | 0.001 |
| T-DSM-IV-S attention deficit | 14.85 ± 6.87 | 10.95 ± 7.99 | 0.012 |
| T-DSM-IV-S hyperactivity | 18.04 ± 6.48 | 10.47 ± 7.90 | 0.00 |
| T-DSM-IV-S oppositional defiant | 11.61 ± 6.42 | 7.66 ± 6.29 | 0.003 |
| T-DSM-IV-S conduct disorder | 4.90 ± 6.22 | 2.00 ± 3.67 | 0.01 |

BDI, Beck Depression Inventory; MBI, Maslach Burnout Inventory; T-DSM-IV-S, Turgay DSM-IV Based Child and Adolescent Behaviour Disorders Screening and Rating Scale.

TABLE 4. COMPARISON OF THE COMPLETER AND DROP-OUT GROUP SCORES IN SCALES

| Scales | Completer (n=21) | Drop-out (n=19) | p |
|---------------------------------|------------------|-----------------|-------|
| BDI | 14.52 ± 7.73 | 14.53 ± 9.81 | 0.708 |
| MBI emotional exhaustion | 18.3 ± 10.65 | 14.32 ± 7.71 | 0.184 |
| MBI personal accomplishment | 9.6 ± 5.25 | 7.32 ± 4.5 | 0.139 |
| T-DSM-IV-S attention deficit | 14.85 ± 6.87 | 14.58 ± 6 | 0.893 |
| T-DSM-IV-S hyperactivity | 18.04 ± 6.48 | 16.21 ± 5.76 | 0.352 |
| T-DSM-IV-S oppositional defiant | 11.61 ± 6.42 | 12.47 ± 6.28 | 0.674 |
| T-DSM-IV-S conduct disorder | 4.90 ± 6.22 | 5.68 ± 5.38 | 0.421 |

BDI, Beck Depression Inventory; MBI, Maslach Burnout Inventory.

of baseline scores and subsequent improvement in PSI-SF (Hwang et al. 2013). In this study as well, results indicated a correlation between depression and burnout levels in mothers and an improvement in ADHD symptoms in children. No significant correlation was found between scores of the attention-deficit and hyperactivity subscales and mothers' depression and burnout scores. However, a significant correlation was found between a decrease in symptoms of CD comorbid with ADHD and a decrease in parents' emotional burnout and depression scores. Furthermore, the relationship between the decrease in ODD symptoms and emotional burnout levels was also found to be significant; this is important as it indicates for the first time that the improvement in mothers after the treatment of children with ADHD depends on the decrease in comorbid CD and ODD symptoms, rather than those of ADHD. This supports the idea that the psychological state of the parents of children with ADHD is influenced more by the disruptive behavior disorder that is comorbid with the disorder than the disorder itself (Downey and Coyne 1990; Lesesne et al. 2003; Gokcen et al. 2011). It is known that behavioral problems accompanying ADHD lead to disturbances in the parent-child relationship and are associated with parental stress level and psychopathology (Johnston and Mash 2001). In a study on 104 children with newly diagnosed ADHD, it was established that ODD and maternal psychopathology were most important predictors of parental stress level (Anastopoulos et al. 1992). Therefore, the improvement of behavioral problems in children with ADHD comorbid with disruptive behavioral disorder is important as it may reduce the emotional burnout and depression levels in their mothers. The fact that discrepant results have been obtained so far in follow-up studies on predictors of improvement in parents indicates that larger studies with more cases should be carried out on the issue.

It has been stated in the literature that depression levels in the mothers of children with ADHD are severe enough to impair their functionality and that depressive mothers display negative parental behavior (Downey and Coyne 1990; Lesesne et al. 2003). It is known that depression in the mother and parental practice in early childhood are specific predictors of behavioral disturbances in children with ADHD (Chronis et al. 2006). In a study by Kim et al., a significant relationship was shown between the decrease in BDI scores after methylphenidate treatment and subscales of PSI, that is, stress related to difficult child scores and parent-child interaction

scores. Methylphenidate treatment decreases the stress level of parents, which, in turn, facilitates a cooperative and constructive parent-child relationship and contributes to further improvement of children with ADHD (Kim et al. 2013).

It can be expected that the treatment of children with ADHD will have a favorable effect on their mothers' depressive symptoms, hence lowering the risk of behavioral disturbances in children with ADHD through a positive impact on their treatment. In contrast, having a child with ADHD is very exhausting and the reduction of negative interactions between parent and children should be an aim of treatment. Parents usually need coaching and support for these children, so that family meetings, training sessions, home visits, and opportunities to share challenges with other families can enhance parental management skills and decrease exhaustion levels. Family therapies in addition to pharmacotherapy exhibit better results in the control of core ADHD symptoms (Sholevar 2007).

The limitations of this study are the small sample size, the short follow-up period of 2 months, the assessment only of the mother's burnout and depression levels, and fathers not being included and not having a control group in the study. In addition, in this study, 47.5% of participants dropped out from the study. This high rate may have influenced the results of the study. The causes of drop out could not be investigated. In another follow-up study on the same issue in Korea, lasting 8 weeks, at the baseline 796 children and parents were present, but the study was completed with 495 cases, yielding drop-out rates similar to that of this study (Hwang et al. 2013).

Conclusions

Our study supports previous findings that decreases in ODD/CD symptoms positively affect mother's depression and burn-out levels when parenting ADHD children. It is thought that this positive effect may have a favorable impact on relationships between mothers and children and ADHD treatment in children.

Clinical Significance

- Treatment of children with ADHD led to a decrease in mothers' depression and burnout scores.
- A positive correlation was found between decreases in ODD scores accompanying ADHD and decreases in MBI-EE.
- A significant relationship was found between decreases in CD scores accompanying ADHD with treatment and decreases in BDI and MT-DT subscale scores.
- We consider that decreases in burnout and depression levels of mothers will decrease negative interactions between the mother and child, which will exert a favorable effect on the child's symptoms.

Disclosures

No competing financial interests exist.

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