

# The effectiveness of mindful parenting training on attention deficit/hyperactivity disorder symptoms in male students

M. AMIRI<sup>1</sup>, S.A.M. FATEMI<sup>2</sup>, S. JABBARI<sup>3</sup>, A. NESAYAN<sup>4</sup>, P. FARMANI<sup>3</sup>

<sup>1</sup>Department of Psychology, University of Zanjan, Zanjan, Iran

<sup>2</sup>Semnan University, Semnan, Iran

<sup>3</sup>Department of Education and Psychology, Zanjan Branch, Islamic Azad University, Zanjan, Iran

<sup>4</sup>Department of Psychology, University of Bojnord, Bojnord, Iran

**Abstract.** – **OBJECTIVE:** One of the main influential factors in the occurrence of behavioral problems in children with attention deficit/hyperactivity disorder (ADHD) is the behavior related to the parenting styles. This study aimed at investigating the effect of mindful parenting training on mothers of children with ADHD in reducing the symptoms of hyperactivity/impulsivity and inattention behaviors.

**MATERIALS AND METHODS:** The research method was quasi-experimental with a pre-test-posttest control group. The study population consisted of all mothers of children from 8 to 12 years. Therefore, 24 mothers of children with ADHD whose scores in the Connors questionnaire (parent form) were above the cut-off point score and diagnostic interview were selected and randomly paired and assigned into two experimental and control groups. All the mothers were between 30 to 38 years old. The research tools included the Connors questionnaire. Mindful parenting training was accomplished in eight 90-minute sessions for the experimental group. In the end, the two groups completed the questionnaires as post-test. Analysis of covariance was used to analyze the data.

**RESULTS:** The analysis of the results showed the effect of mindful parenting training on reducing the symptoms of hyperactivity/impulsivity and inattention behaviors of children with ADHD in the experimental group compared to the control group ( $p$ -value  $<0.05$ ).

**CONCLUSIONS:** The educational and behavioral methods that parents and especially mothers use in response to their children's problematic and undesirable behaviors can increase the incidence of these behavioral problems in the long run. Hence, it is addressed in this study due to the great importance of changing the behavioral and educational methods of such parents. The findings generally show that mindful parenting education has affected the emotional climate

governing parent-child interactions and has reduced behavioral problems in children suffering from ADHD.

*Key Words:*

Attention-Deficit/Hyperactivity Disorder (ADHD), Mindful parenting training, Student.

## Introduction

ADHD is a neurodevelopment disorder characterized by a degree of inattention, disorder, or hyperactivity-impulsivity<sup>1</sup>. It is also considered to be one of the most common psychological disorders worldwide, with an estimated prevalence among school-aged children in the range of 8 to 12%<sup>2</sup> attention deficit hyperactivity disorder (ADHD). In a study done on primary school students in Zanjan (western Iran), a high prevalence of attention deficit hyperactivity disorder was reported as 9.1%<sup>3</sup>.

Children with this disorder are very talkative, pessimistic, and careless. They also participate less and often refuse to follow the rules and regulations. These children are negligent in their assigned tasks, and they also have difficulties in performing the required activities and ordering in their daily lives<sup>4</sup>.

On the other hand, children with ADHD face many challenges in the family due to biological problems and the inability to self-regulate<sup>5</sup>. In contrast, most of these parents are more aggressive in dealing with a child with ADHD and use punitive parenting styles<sup>6</sup>.

The focus of many researchers has been sought to find appropriate interventions to reduce the problems of these children and their mothers due

to the issues and problems raised in children with ADHD as well as their families and especially their mothers. One of these intervention methods that researchers have recently considered is mindfulness-based parent training (MBPT), which is based on the principles of mindfulness therapies<sup>7</sup>. It targets the psychological problems of parents, including anxiety and depression, and also teaches parents skills to improve their parenting style<sup>8</sup>. So, considering that this therapeutic approach seeks to reduce parental stress and disciplinary parenting methods, as well as increasing parental responsiveness to the needs and wants of the child<sup>9</sup>. As one of the third-generation behavior therapies, it emphasizes treating psychological problems on acceptance as well as establishing a psychological relationship with one's thoughts and feelings<sup>10</sup>. Researchers in this field believe that pathological problems of parents, including anxiety and depression, as well as parenting without the presence of mind, are important factors in the occurrence and exacerbation of behavioral problems in children<sup>11</sup>. Some systematic reviews and meta-analyses have also provided supports for the use of parent behavioral training<sup>12,13</sup>, with effect sizes ranging from small to large (0.22 to 0.67). In one of the latest meta-analysis studies, paternal behavioral education appeared to be highly effective in reducing paternal behavioral deficits (62%)<sup>14</sup>.

In mindfulness-based parenting training, parents apply these skills in interactions with the child and in challenging parenting situations. Hence, it seems that they can improve the psychological condition of children by changing their parenting style<sup>15</sup>. With this background the present study was conducted to investigate the effectiveness of mindfulness parenting training to mothers of children with ADHD on reducing the symptoms of hyperactivity/impulsivity and inattention behaviors of their children.

## Materials and Methods

This observational cross-sectional study is methodologically quasi-experimental with pre-test-posttest and control group. The statistical population of the present study was all male students with ADHD in elementary school. Indeed, in Iran, due to family and cultural considerations, ADHD recognition faces difficulties. Moreover, based on the epidemiology, ADHD recognition happens less in girls, since the families refuse more to ac-

cept girl's symptoms and collaborate less, in this study, the boys suffering from ADHD and their mothers in 2018-2019 in Zanjan (west Iran) were taken into consideration. These students were not recognized as hyperactive beforehand but during the screening process and clinical interviews. In order to decide on an appropriate sample for the study, among several primary schools for boys in Zanjan, the Connors questionnaire (parent form) children's morbidity questionnaire was provided to the parents of the children. ADHD recognition was based on primary screening using a parental form of Connors questionnaire (cut-off point above 60), and then the clinical interview was carried out based on recognition criteria of DSM5. During the process, the mothers answered the questionnaire in a group session, and then after checking the questionnaires, clinical interviews were done individually with mothers who had received the highest scores, based on the cut-off score of 60. In the end, the mothers completed the Connors scale as a post-test. Finally, 60 prototypes were selected based on the scores of this questionnaire and also the researcher's diagnostic interview with their mothers. A diagnostic interview was conducted by the child and adolescent psychologist with the mothers of these children according to the symptom screening technique and based on the Diagnostic and Statistical Manual of Mental Disorders in order to apply more accurately diagnose attention-deficit/ hyperactivity disorder, a mostly hyperactive-impulsive type. It should be noted that for accurate sampling, children who scored higher than the cut-off score in the Connors questionnaire for attention-deficit/ hyperactivity disorder were selected. The inclusion criteria for the participants of this study were as follows: the type of ADHD was one of the inclusion criteria, which in this study, all children with ADHD were mainly affected by the combined type of ADHD. Single-parent or two-parent families were also considered. If any household had more than a child with ADHD, all the children with ADHD were considered for inclusion in the study. Children's age (8 to 12 years old) and education level was another inclusion criterion) all students were in elementary school (. Mothers' education was also considered, which all of them were college-educated in our sample. Not participating in more than two behavioral training sessions was the exclusion criterion. After the written consent of mothers to participate in the study, 30 of them were selected and randomly divided into two experimental and control groups (each

group was contained 15 people) were replaced. It should be noted that the group experienced a decline due to the exclusion criteria based on the absence of more than one session, and the results were analyzed on 24 mothers (12 mothers in the experimental group and 12 ones in the control group). In this study, due to cultural limitations, parenting behaviors were not observed before and after the study, and only self-reports were taken into considerations.

In both groups, a pre-test was conducted to assess the extent of hyperactivity / impulsivity and inattention behaviors in children using the Connors questionnaire (parent form) of children. Then the experimental group underwent mindfulness-based parenting training for eight sessions. At the end of the sessions, the mentioned variables were re-measured in both groups. The content of the educational program of this research is based on the book "Parenting based on mindfulness; Mental Health Staff Guide, by Susan Bögels and Kathleen Restifo (2014)<sup>16</sup>. In the following, the educational content of each interference session is described.

The first session (Automatic Parenting): Creating a clear understanding of mindful thinking using practical experience and creating a supportive environment for mothers away from guilt and judgment, as well as mentioning the goals of the interference. Identifying participants' propensity to automate parenting tasks and their negative effects on the parent-child relationship. Training as a part of formal and informal mindfulness exercises and homework assignments.

The second (Beginner-minded parenting): Familiarize mothers with their pessimistic prejudice towards their children and teach beginner-minded workouts to realize the child's integrity. Do self-appreciation exercises for the child to get rid of negative prejudices. Doing self-compassion as a substitute for blaming them and assigning homework.

The third session (Communicating with the body as a parent): Formal body scans practice training. Awareness of unlikable emotions and its pretending in the body to decrease the intensity of unlikable emotions. Practicing self-compassion as a powerful solution to parents' efforts to complete their parental duties to the fullest and assigning homework.

The fourth session (Responding to reacting in challenging and stressful parenting situations): Increasing mothers' ability to act in response to their child in a skillful and creative way and to

teach them how to avoid reacting according to the habitual pattern of the past. Identifying the particular physical symptoms of anxiety along with accepting it so that the mind shifts from avoidance to proximity. Practicing three minutes of breathing space to pause in stressful parenting situations and assigning homework.

The fifth session (Parenting patterns and schemas): Teaching common types of schemas in the role of parenting, as well as the irritated and susceptible child and the punitive and expectant parent. Familiarity and labeling of emotions with activated schemas to end the automatic reaction. Communicating with the child inside and having a conversation with him instead of blaming him so that the emotional state is under the control of a healthy adult. Assigning homework.

The sixth session (Disagreement and parenting): Getting known with the fact that disagreement is inevitable in intimate relationships and what is important is disagreement resolution. Teaching disagreement resolution techniques is first about not reacting to the stressful events of parenting and then bearing in mind the situation from the child's outlook.

The seventh session (training compassion and determining limitations): Teaching compassion therapy exercises according to the principles of Nef so that the attitude of forgiveness and friendship to oneself, the child, and all beings develops in them. Encouraging independence in the parenting principles and setting boundaries for the child, mothers learned that they must be alert of their physical and emotional boundaries. Assigning homework.

The eighth session: As mindfulness-based parenting is a sustainable and continual process of intervention, mothers were asked to recognize and present their plans for future mindfulness exercises, as well as possible obstacles to future failure and progress. Mothers were also asked to talk about the difference between their first exercise experience and their current experience, and finally, to conclude about them.

### **Instrument**

Connors' Rating Scales (CRS): The CRS is a widely used instrument designed for the use of parents<sup>17</sup> and teachers<sup>18</sup> to assess ADHD in children with the ages between 3 and 17. The CTRS (Connors' Teacher Rating Scale; CTRS) consists of 28 items answered on a four-point Likert scale, and 10 of the 28 items specifically assess hyperactivity<sup>18</sup>. The CPRS (Connors, Parker, Sitarenios,

**Table I.** Descriptive statistics of age among mothers and ADHD children.

	Group	N	Mean	SD
Mother's Age	Experimental	12	37.05	2.10
	Control	12	35.14	2.50
Child's Age	Experimental	12	9.5	1.5
	Control	12	10	0.75

and Epstein, 1998) consists of 48 items used to assess five different groups of childhood problems, including impulsivity-hyperactivity. All of the measures used in the study were translated into Persian.

### **Ethical Considerations**

Ethical approval was obtained from University of Zanzan, Iran. Sessions' processes were explained, and informed consent was obtained from individuals. Participants were assured about confidentiality for the information. Confidentiality was guaranteed by coding the questionnaires. Moreover, this study was approved by a Moral Committee of Zanzan University. After finishing the research process, educational, parental mindfulness sessions were held for the control group.

### **Statistical Analysis**

Data was analyzed using SPSS Version 16 (IBM Corp. Armonk, NY, USA). The data was analyzed using descriptive statistical methods such as mean and standard deviation, and inferential statistical methods such as the Levin test were also used to investigate the homogeneity of variances of research variables. Univariate analysis of covariance was used as a statistical control method to investigate the effect of mindfulness parenting on ADHD symptoms of children's confrontation and in order to control the effect of participants' familiarity with the questionnaires used in the pre-test research.

## **Results**

The children of the mothers participating in the study were in the range from 8 to 12 years old, and the mean age of the mothers participating in the study was 37.50 in the experimental group and 35.14 in the control group, according to the descriptive findings (Table I).

According to the current study, which is a pre-test and post-test with a control group, univariate analysis and augmented score method were used

to analyze the data and to control the effect of the pre-test. Table II presents the statistical indices of the scores of the two groups on the scale of the Connors questionnaire.

Analysis of covariance (ANCOVA) has assumptions that include the homogeneity of regression slopes between the random variable (pre-test) and dependent variables. In the current study, group interaction and pretest are not significant for hyperactivity/impulsivity variables ( $p$ -value  $<0.05$  and  $F = 1.324$ ), and inattention behaviors ( $p$ -value  $<0.05$  and  $F = 1.259$ ). Therefore, it can be said that this presupposition has been observed. Another assumption of this test is the homogeneity of variances. Levin variance homogeneity test was used to examine the two groups' homogeneity of variances in the pre-test and post-test. Levin test showed that the hyperactivity/impulsivity and inattention behaviors was not statistically significant (hyperactivity/impulsivity  $p$ -value  $<0.05$  and  $F = 1.417$ , inattention  $p$ -value  $<0.05$  and  $F = 1.689$ ). So, the assumption of homogeneity of variances was also confirmed. According to the main assumptions of this test, we are allowed to use this statistical test.

According to Table III, there were significant differences between the average scores of hyperactivity/impulsivity with ( $F = 7.58$  and  $p$ -value-0.001) and inattention ( $F = 14.41$  and  $p$ -value  $< 0.001$ ) between the experimental and the control groups. Therefore, it can be concluded that at the post-test, mindfulness training for mothers will decrease hyperactivity/impulsivity and inattention among ADHD children compared to the control group.

## **Discussion**

The aim of this study was to investigate the effect of mindfulness parenting training on reducing the symptoms of hyperactivity/impulsivity and symptoms of inattention in children with ADHD. The results of the current study showed that mindful parenting education to mothers has

been effective in improving the ADHD symptoms of their children. In other words, the symptoms of hyperactivity/ impulsivity and the symptoms of inattention in children have decreased.

The results of the data analysis in response to the research hypotheses showed that teaching parenting methods to mothers based on mindfulness has been effective in reducing the symptoms of hyperactivity/impulsivity and inattention, and its effectiveness is also statistically significant. The findings of this research are consistent with previous studies which have evaluated the effectiveness of mindfulness-based parenting education on childhood behavioral problems and have achieved similar results<sup>9,15</sup>.

From the family system perspective, members of a family are interdependent, and the behavior of members cannot be analyzed individually. Therefore, the parent-child relationship and how parents manage children's behavioral problems is also an imperative and influential factor in children's health status<sup>11</sup>. Several studies have shown that mindfulness promotes physical and mental health by increasing self-efficacy, regulating emotions, gaining the ability to cope with situations, and increasing individual motivation<sup>6,7</sup>. As mentioned above, mindfulness-based parenting teaches parents how to deal with children and requires them to make purposeful changes to their children. For instance, in the current study, after mothers realized that they had ignored their child's requirements and feelings under stress and tension related to their child's behavioral problems, they were asked to completely understand

the child's daily activities by practicing observation, identify their child's manner and improve the previous disturbed relationship.

In regard to the practice of appreciation, it provided mothers actual reasons to appreciate themselves and their children. As noted, focusing only on the child's problems causes mothers to lose a great share of their child's exclusive behaviors and characteristics. Hence, to record these pleasant events along with the feelings and emotions associated with it, mothers were asked to be aware of the pleasant events that their child makes for them on a daily basis which they may ignore. These exercises decline the pressure and anxiety on mothers and give them back the missed opportunity to enjoy their childhood. These factors lead to improved parent-child relationships and reduce the tension in the relationship and consequently play a major role in plummeting children's behavioral problems<sup>10,11</sup>.

Breaking the intergenerational cycle resulting from maladaptive parenting habits and schemas is another effective mechanism that has been effective in improving parenting performance<sup>8</sup>. According to the basic principle of mindfulness which considers awareness and acceptance as the cause of change, mothers were introduced to four types of styles related to the role of parenting and the conditions that activate these styles. Therefore, they realized that they could easily create a conversation between what is being experienced and themselves by labeling activated schema states. They also learned that the thoughts and feelings experienced were not alike to their actu-

**Table II.** Descriptive statistics of inattention and hyperactivity/impulsivity among ADHD children.

Dependent variables	Experimental				Control			
	Pre-test Mean	SD	Post-test Mean	SD	Pre-test Mean	SD	Post-test Mean	SD
Inattention	24.70	3.12	15.54	3.47	23.70	3.21	22.85	3.40
Hyperactivity/impulsivity	13.22	3.41	6.58	3.30	12.80	2.95	13.12	3.30

**Table III.** Results of Analysis of Covariance of hyperactivity/impulsivity and inattention Behaviors Scores in the Experimental and Control Groups.

Dependent Variables	SS	df	MS	F	p
Hyperactivity/impulsivity	68.54	1	112.80	7.58	0.001
Inattention	112.80	1	112.80	14.41	0.001

SS= sum of squares, MS= Mean Square.

ality and should not react accordingly. The result of the interruption is the replacement of a healthy adult with an incompatible style. A healthy adult gave mothers the opportunity to use the right parenting methods in dealing with their child instead of using the failed parenting methods of their childhood.

On the other side, it should be explained that the mindfulness-based parenting approach in teaching educational principles works in a different way from the parental behavioral education approach. In this approach, although locating limits along with compassion is well thought-out a necessary and imperative factor, but no training on how to regulate children's behavior is given to parents<sup>15</sup>.

### Conclusions

According to our study, mindfulness is helpful for children with ADHD and their parents, as judged by the parents. As the importance of both parents' roles has shown to increase the mindfulness in children with ADHD, fathers need to be encouraged to attend meetings along with mothers. Because mindfulness-based therapies for ADHD are becoming more common in clinical practice, future research should focus on obtaining empirically robust data for their efficacy and effectiveness, ideally including ratings from independent observers as outcomes.

### Conflicts of Interest

The authors declare no conflicts of interest.

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