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Comparison of the effectiveness of three methods of cognitive-behavioral therapy (individual counseling, group counseling and parent education) on reduction of ADHD syndrome

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Abstract
The purpose of this study was to investigate and compare the effectiveness of various cognitive-behavioral therapies on reduction of ADHD syndrome. The research method was semi-experimental. The population of this study included all schoolchildren aged 7 to 12 years old who received diagnosis of Attention Deficit Hyperactive Disorder (ADHD) and referred to psychiatric counseling clinics of Tehran city in November and December 2016. Out of this, 80 subjects were selected by cluster sampling method and available sampling. They were randomly assigned to three experimental and one control groups. The information was collected using Parental and Teacher's ADHD Scale. To analyze the collected data, multivariate covariance test was used. The findings of this study showed that individual counseling has a significant effect on the reduction of ADHD syndrome in the parents scale and the teachers scale, and in all components of behavior in the class, participation and group collaboration, and attitude toward the power authorities, and reducing the syndrome of ADHD Also, the findings of this study showed that group counseling and parent education only affect the ADHD syndrome in the parent form and in the overall score of teacher form and also in the component of group collaboration and collaboration. Meanwhile, the findings of this study showed that there is no significant difference between the three methods of cognitive-behavioral therapy, namely, individual counseling, group counseling and parent education in reducing the syndrome of ADHD.

Keywords: attention deficit hyperactive disorder, cognitive-behavioral therapy, individual counseling, group counseling, parenting

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INTRODUCTION

The intellectuals and thinkers of each society, in order to increase the productivity and efficiency of the two systems of family and education in the education of children as outputs of these two systems, have attempted to identify, formulate and train coded programs for growth and promotion of educational, social and emotional status of children (Wisani et al. 2015), especially children who have a special educational or therapeutic need due to a disorder, including children with attention-deficit/hyperactivity disorder (ADHD) (Pliszka et al. 2000). Attention-deficit/hyperactivity disorder (ADHD) is one of psychosocial-behavioral disorders reported as the most common disorders in children. Attention-deficit/hyperactivity disorder (ADHD) in children decreases performance function, work memory (Nejati et al. 2013) and sleep problems (Shishnpour et al. 2014). In the diagnostic and statistical manual of mental disorders -5 (DSM-5), attention-deficit/hyperactivity disorder (ADHD) is defined as: permanent pattern of lack of attention or hyperactivity - impulsivity that blocks the function or progress of the individual. In this manual, for this disorder, three subgroups are defined: Predominantly inattentive (mainly the lack of attention): the main feature of this subgroup is that the distraction is easy; one can't focus on something for a long time; does not focus on the details and he/she can't finish the work, or end by force and perfunctorily. Children with this subgroup have fewer behavioral and thoughtless

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problems than those with hyperactivity, but instead, they may be described by their friends as lazy, dreamy, anxious and shy (Ganji 2013). There is no consensus on the prevalence rate of ADHD. Some psychologists believe that this disorder is over-diagnosed, that is, many children are diagnosed without enough reason (are officially diagnosed with this disease), or when they are diagnosed that for some reason, this is not necessary. However, according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), it is estimated that about 5% of children and about 2.5% of adults are with attention-deficit/hyperactivity disorder (ADHD) (Ganji 2013). In the study conducted by Bloom and Cohen (2010), it is reported that eight million American children are under medication due to attention-deficit/hyperactivity disorder (ADHD). The prevalence of this disease in Iran is reported to be between 7 and 10 percent in children (Henduei 2010). In some studies, the prevalence of this disorder has been reported in school children of 12.5% (Moradi et al. 2008). The attention-deficit/hyperactivity disorder (ADHD) also continues in adolescence, youth and adulthood (Sadock and Sadock 2005). Due to dimensions and extent of the effect of this disorder, ADHD have long been of interest to specialists and therapists and hence, various remedies and treatments are proposed to solve this problem. Because of the diversity of problems associated with attention deficit / hyperactivity disorder, it is not possible that a single treatment alone can cover all the requirements for the treatment of this disorder, which is why clinicians often adopt multiple therapeutic strategies in combination in order to each one considers a different aspect of the psychosocial problems of the child (Anastopoulos and Shaffer 2001). Drug therapy and psychotherapy have been used as two treatment groups in the area of treatment for attention deficit / hyperactivity disorder. Studies conducted by the researchers suggest that drug therapy is effective in reducing the symptoms of ADHD; for example, Vahedi et al. (2014) in a study showed that drug therapy reduces impulsivity and improves attention in male students with attention-deficit/hyperactivity disorder (ADHD). However, the results of some studies indicate that around 42% of children do not respond to medication for attention deficit / hyperactivity disorder (Brown 2000, Stierman 2000) and in some of these children behavioral problems are increased following medication (Brown 2000). Although drug therapy is based on a clear framework, with the approval of most of psychiatrists and the use of certain drugs and in the form of certain therapeutic protocols, nevertheless, the topic of non-pharmacological therapies is always challenging and includes results and discussions that is quite clear in the contradictory results of the effectiveness of these therapies (Smith et al. 2006).

One of the non-pharmacological therapeutic approaches offered to people with attention deficit / hyperactivity disorder is cognitive-behavioral therapy theory. Cognitive-behavioral therapy is based on the kind of behavioral therapy that has emerged in the context of traditional psychotherapy and reflects the growing interest of therapists in correcting cognition as an effective factor in emotions and behaviors (Granrow et al. 2017). Cognitive-behavioral therapy has an educational approach in which certain techniques are taught and is a training-based aspect. In this way, the defective cycle of the problem is broken down and the person is encouraged to search for the relationship between negative thoughts and inefficiency feelings. The therapist encourages the client to a kind of collaborative experience, during which from client's own experiences a series of behavioral experiments are used in order to properly or incorrectly evaluate those beliefs (Frey 2003). Therefore, the purpose of this therapeutic approach is to correct irrational beliefs, dysfunctional beliefs, false interpretations and cognitive errors, feelings of control over life, facilitating constructive self-talking and reinforcing coping skills (Granrow et al. 2017). Cognitive-behavioral therapy emphasizes that thinking processes are as important as environmental influences (Lipca et al. 2014). Cognitive-behavioral therapy is effective in creating and enhancing capabilities such as decision-making, motivation, acceptance of responsibility, positive relationship with others, happiness, self-esteem, problem solving, self-regulation, self-efficacy and mental health (Hall et al. 2016). In the studies conducted by Thyagarajan (2016) and Young et al. (2016) on ADHD, the results indicated that cognitive-behavioral therapy is effective in reducing the symptoms of attention deficit / hyperactivity disorder. The interventions of cognitive-behavioral therapy can be implemented in a variety of ways, such as group, individual, and parent education (Tayebzadeh and Sepehrian-Azar 2017). In the method of cognitive-behavioral therapy, individual counseling is a general term used for various processes such as interviewing, performing tests, guidance and helping people to solve their problems and plan for their future (Weber 1985, quoted by Saatchi 1998). The goal of individual counseling based on the cognitive-behavioral approach is to emphasize behavioral and emotional change through change in cognition (Scott et al. 1948, quoted by Khodayarifard 2007). Cognitive-behavioral methods are effective in improving the ability to manage anger, increase self-esteem and increase self-satisfaction. Because these problems are commonly associated with the main symptoms of attention deficit / hyperactivity disorder, most boys and teenagers benefit from treatment using individual counseling techniques (Kapalka 2010, quoted by Mohammadifar and Shabanpour 2016). Group counseling is also another therapeutic style in cognitive-behavioral method that is similar to individual counseling, with the difference that in this method the therapist instead of focusing on a

person and his/her specific problems deals with a group or several people (Bieling et al. 1968, quoted by Khodayarifard and Abedini 2010). Another method of cognitive-behavioral therapy is parent education and using parental techniques. The cognitive-behavioral approach of parental education teaches parents with specific behavioral management skills to eliminate negative interactions between parent and child and, as a result, reduce child's undesired behaviors and increase positive behaviors (Conners et al. 2007). In studies such as Mulqueen et al. (2015) and Davari (2015), it has been also found that parent education plays a role in reducing the symptoms of their children's attention deficit / hyperactivity disorder.

However, as mentioned above, various studies have examined various types of cognitive therapy in the symptoms of attention deficit / hyperactivity disorder, and the results in most cases indicate the effect of this treatment, however, the review of the theoretical background indicates that limited studies have been done on the comparison of cognitive-behavioral therapies in children with ADHD. Therefore, the present study compares the effects of different methods of cognitive-behavioral therapy on children with ADHD and will answer the question as to whether three methods of cognitive-behavioral therapy (individual counseling, group counseling and parent education) are effective on reduction of ADHD syndrome. Which of these three methods of cognitive-behavioral therapy including individual counseling, group counseling and parenting education is more effective on reducing the symptoms of ADHD?

METHOD

The research method of present study is semi-experimental. The research design is a semi-experimental one with pretest and posttest with the control group. The statistical population of the present study included all male schoolchildren aged 7-12 years old who had diagnosis of ADHD and were referred to psychology counseling clinics of Tehran city in November and December 2017. Of the referrals, 80 people who had inclusion criteria for the research and willing to cooperate were selected. The inclusion criteria for the study included the following: age range of 7 to 12 years, ADHD based on Conner's behavioral problems Scale and Clinical Interview Based on the Diagnostic and Statistical Manual of Mental Disorders, having parents with a minimum academic degree of diploma, use of Ritalin tablets for at least 2 months as pharmacotherapy and 10 to 20 mg / day doses and not using other drugs associated with ADHD, lack of comorbid disorders such as conduct disorder and disruptive mood dysregulation disorder, no previous treatment in accordance with the methods used in the research, lack of chronic medical illnesses, score higher than the cut-off point in the pre-test and commitment to attend in sessions. Then, the recruited subjects were randomly assigned to four groups of individual counseling, group counseling, parent education and control group for each group of 20 people.

TOOLS

For the purpose of collecting the necessary information, Conner's attention deficit/hyperactivity syndrome scale-parent and teacher form was used. Teachers' form of this scale has 38 items and aims to diagnose children with attention deficit / hyperactivity disorder by teachers. The scoring scale of this questionnaire is of a 4-degree Likert spectrum type (in the range 1 to 4, it is not true at all, and is quite true). This questionnaire has three subscales of child behavior in the class; group participation and collaboration; and an attitude toward the authorities. If child's score is higher than 57 it indicates attention deficit disorder. The higher the score, the higher the child's disorder, and vice versa. Conner et al. (1999) have reported a reliability of 0.90 for this scale (quoted by Alizadeh 2005). In Iran, Shahim and Yousefi (2007) reported a retest coefficient of 0.76 and Cronbach's alpha of 0.86 for this scale. In this study, the reliability of this test was calculated using Cronbach's alpha coefficient of 0.75. Conner's parent form also has 26 items designed to diagnose children with attention deficit / hyperactivity disorder by parents. The scale of the questionnaire is also a 4-degree Likert spectrum (in the range 1 to 4, not true at all, and completely true) and parents are asked to review their child's behavior in the past month and respond based on this spectrum. If the child's score is higher than 34, it indicates attention deficit/hyperactivity disorder. The higher the score, the more the child's disorder will be, and vice versa. Canares et al. (1999) reported reliability of this scale of 90%. The validity of this questionnaire has been reported by the Institute of Cognitive Sciences equal to 0.85 (quoted by Alizadeh 2005). Reilly (2011) reported Cronbach's alpha coefficient of 0.89 for this scale. Wisani et al. (2015), using Cronbach's, Spearman-Brown and Gutmann's alpha, reported the reliability of this scale as 0.91, 0.90, and 0.90 respectively. In this study, reliability of this test was calculated using Cronbach's alpha coefficient as 0.87.

PROCEDURE

After identifying psychological centers, a sample of individuals was selected first during an interview. They were randomly assigned to four groups of cognitive-behavioral individual counseling, parental education, group counseling and control group. For the three experimental groups, therapeutic education was performed in accordance with the principles proposed by Kapalka (2010) in the counseling and psychotherapy program for boys and men with hyperactivity / attention

Table 1. Cognitive behavioral therapeutic content - individual counseling

Sessions	Session Content
First session	After the initial introduction, creating trust and emphasis on confidentiality, and the circumstances and process of the sessions were addressed
Second session	Identifying the strengths and weaknesses of person, making the person aware of these strengths and weaknesses
Third session	Discussing the similarities and differences of individuals with peers. Providing a framework for problems and issues that a person has little ability to do. Identifying the disease to the individual in a way that is as natural as possible.
Fourth session	Encouraging client to express their feelings about drugs and their use and try to replace them with more positive emotions
Fifth session	Education on impulsive behavior and helping to understand the reverse sequences resulting from these behaviors
Sixth session	The education and help to identify impulsive behaviors in different situations, and to understand the implications of these behaviors and identify alternative and more appropriate behaviors
Seventh session	Help to identify individual's unusual energy. Understanding hyperactivity and its problems for people around you
Eight session	Education and provide solutions to prevent hyperactive behaviors (such as using labels or signs at home or school to remind individual to stay home and have less mobility)
Ninth session	Identifying the positions (circumstances) where responsibility is important for the end. Listing of these important positions (circumstances)
Tenth session	Training and work with client regarding positive self-talking in completing the assignments
Eleventh session	The ability to organize particularly organizing skills related to homework and academic subjects were trained
Twelfth session	Training to recognize different emotions and behaviors. Identifying the situations that trigger different emotions
Thirteenth session	Identification of physical reactions in emerging different emotions and behaviors
Fourteenth session	Help to identify thoughts associated with emotions (feelings). Helping to think about the consequences of those thoughts. Replacing positive thoughts with these emotions (feelings)
Fifteenth and sixteenth sessions	Summary of what happened during the treatment process and preparation of client for the end of treatment and the end of the sessions

Table 2. Cognitive behavioral therapeutic content- parent education

Sessions	Session Content
First session	Introduction and help to identify the wrong communication and situations that cause these communications and conflicts
Second session	Creating real expectations of child's communication and problems. Explaining the role that these expectations can have in the improvement of their child's problem. Redefining parenting goals. Paying attention to the strengths and weaknesses of themselves and their children. Descriptions of the illness of children and the characteristics of the disease to parents
Third session	Training techniques to instruct. Training parent to make eye contact before issuing any command. Commands should be in command and with respect. The commands should be direct and not question mode
Fourth session	Continuing to teach instruction techniques and reviewing and providing guidelines for when the command is not executed
Fifth session	Train parent to avoid repeating the unfruitful loops that lead to the rise of disputes. Teach them if their requests are not made, avoid to treat they can't do
Sixth session	Training parent to avoid physical threats. Teach parent in the case the child doesn't do request give a warning that is practical and does not lead to anger and negative reaction
Seventh session	Teaching parents regarding children with ADHD have a weak self-control that can lead to anger. Teaching parents to distract her/his child when she/he has anger that has no previous stimulus. If you can't get away, you can use the basket program (sitting child on the seat and holding hands from behind). Teaching that the shorter interruption the more effective. Teaching that after the interruption, they should explain to the child why they were in that position
Eight session	Training contracts between parents and children by specifying the punishment and reward for any behavior. Teaching that parents along with the child formulate a list of responsibilities and give the child an encouragement
Ninth session	Teaches parents regarding home-based homework is difficult for these children, and they can convince their children to do these tasks by generalizing behavioral contracts
Tenth session	Training that the behavioral contracts created in the previous steps, be practiced, and homework included in it and can be transmitted to other situations and behaviors
Eleventh session	Teaching that the expectations of parents outside the home should be realistic and gradual. Teaching that it's unreasonable to expect quick improvement. Training to apply behavioral contracts in out-of-home situations and out-of-home behaviors
Twelfth session	Training parents how these kids may be disturbed by work or talking because of their impulsiveness. Teaching parents to explain to children that this is not the right behavior and is the headstrong child's characteristics, and that this description should be perfectly calm and without anger
Thirteenth session	Training the formation of children behavior and, finally, strengthening it
Fourteenth session	Training parents regarding this is difficult for these children to quickly work from one job to another. Teaching it to parents who can use the behavioral contract, as well as the warning (alert) technique
Fifteenth and sixteenth sessions	Summing up what was said during training sessions and preparing for the end of the sessions

Table 3. Cognitive behavioral therapeutic content- Group counseling

Sessions	Session Content
First to fourth session	Initially after introduction, the group was explained to the boys and expectations were determined. The rules of the group were determined. The behavioral contracts were created to enforce group rules. The boys' behavior dealing with each other and friends or other games was examined. The boys talked about how to enter other game groups and their feelings about it. How to enter other groups was taught. Discussions on what came up with the arrival of people in the past group were addressed, and paying attention to the kind of people communication was described
Fifth to eighth session	Active participation in peer group was taught. Self-control games were performed. Objectives such as self-control, anger management, and behavioral abilities were also addressed and worked on. Handling management and social skills using games like simulation of a television interview program
Ninth to twelfth session	Initially the problems that these children had described clearly, to make people understand what the real nature of the problem is. When the problem was completely defined, the desired behavior for the problem was raised in mind, and the appropriate option was chosen before any decision was taken. When this list was completed, the sequence of alternatives was defined and guessed and any appropriate analysis was examined. After reviewing the features, the best and most effective behavior was chosen in solving the problem.
Thirteenth to sixteenth session	They were provided the training of diagnosis of mental symptoms that created a special feeling. Training was also provided the reduction of psychological arousal. Detecting whether feeling really anger-anger may be a secondary sensation (for example, a feeling of stress). Depending on the feelings, possible alternatives for expressing that feeling were determined. Subsequently, each of the alternatives was examined and guidelines were provided to select the most suitable alternative. In the end, it ends with a review of all the work done at the previous sessions

deficit that the individual counseling group received 16 one-hour counseling sessions and the group counseling group underwent 16 two-hours sessions counseling, and the parent education group also received a 16 two-hours sessions education (it should be noted that cognitive-behavioral therapy of parent education, one of the parents of a child with ADHD, which spends more time in the day with the child, participated in the session). No intervention was performed for the control group. Pre-test and post-test were performed before and after the intervention. The content of the sessions is provided in **Tables 1**-**3**.

FINDINGS

The descriptive statistics of the variables studied are presented in **Table 4**.

Covariance analysis should be used to evaluate the efficacy of the treatments. Prior to using this test, the assumptions of using it were investigated.

As shown in **Table 5**, the homogeneity assumption of the covariance matrix considering the significance level is accepted.

As shown in **Table 6**, the regression slope homogeneity condition is established. The other condition was the equality of error variances. The results

Table 4. Describing the scores of attention deficit / hyperactivity disorder syndrome

Variable	Component	Group	Individual counseling		Parent education		Group counseling		Control	
		Phase	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Attention deficit / hyperactivity disorder syndrome- Parent form	Attention deficit / hyperactivity disorder syndrome	Pre test	72.75	3.19	75.65	6.06	78.80	4.60	71.45	6.59
		Post test	53.20	7.48	53.90	5.79	57.05	10.00	68.45	6.22
Attention deficit / hyperactivity disorder syndrome- Teacher form	Child's behavior in class	Pre test	30.70	7.23	35.20	7.00	30.50	6.49	26.05	5.82
		Post test	17.30	3.79	18.10	3.12	18.15	2.45	20.55	4.16
	Group participation and collaboration	Pre test	10.65	2.81	11.85	2.68	12.65	3.26	12.05	2.74
		Post test	6.85	0.98	7.65	1.42	7.50	1.50	9.55	1.60
	Attitude toward the authorities	Pre test	9.55	2.52	11.60	2.66	12.10	3.17	11.00	3.76
		Post test	7.35	1.95	8.00	1.91	7.35	2.10	9.75	2.55
	Total score	Pre test	50.90	9.42	58.65	9.65	55.25	9.11	49.10	9.18
		Post test	31.50	4.26	33.75	4.97	33.00	3.83	39.85	5.86

Table 5. Box test for homogeneity analysis of covariance matrix

Box statistics	F value	Degree of freedom 1	Degree of freedom 2	Significance level
42.397	1.277	30	15880.554	0.142

Table 6. The results of homogeneity analysis of regression slopes for the attention deficit / hyperactivity disorder syndrome - parents form and teachers form

Variable	Component	Mean of squares	F	Significance level
Attention deficit / hyperactivity disorder syndrome- Parent form	Attention deficit / hyperactivity disorder syndrome	63.328	1.128	0.351
Attention deficit / hyperactivity disorder syndrome- Teacher form	Child's behavior in class	14.053	1.239	0.303
	Group participation and collaboration	4.229	2.305	0.067
	Attitude toward the authorities	3.733	0.852	0.497
	Total score	10.153	0.453	0.770

of the Leven's test indicated that this condition was established in two tests of the attention deficit / hyperactivity disorder syndrome in parents form and teachers form and in all its components (P <0.05). The covariance test was used to evaluate the effectiveness and comparison of the groups.

As the data in **Table 7** show the Wilkes lambda value is 0.458, which is significant at level (P <0.01). This means that there is a significant difference between the four groups of individual counseling, group counseling, parent education and control group in terms of hyperactivity syndrome in the parent form and teachers' form of and its components.

The results of **Table 8** show that by controlling the effects of pre-test, individual counseling, group counseling and parent education has a significant effect on the attention deficit / hyperactivity disorder syndrome. To find out how much difference exists between the

Table 7. Information about the reliability indices of the multivariate variance test of attention deficit / hyperactivity disorder syndrome in parents form and teachers form and in all its components among the four groups

Effects	Value	F value	Degree of freedom of hypothesis	Error of degree of freedom	Significance level
Pillai's Trace	0.572	4.183	12	213	0.001
Effect of Wilks's lambda	0.458	5.237	12	182.848	0.001
Hutling effect	1.121	6.320	12	203	0.001
Roy's largest root	1.062	18.851	4	71	0.001

Table 8. Multivariate covariance analysis of effect of individual counseling, group counseling and parent education on hyperactive syndrome in parent's form and teacher's form and its components

Variable	Component	Source of variations	SS	df	MS	F	P
Attention deficit / hyperactivity disorder syndrome- Parent form	Attention deficit / hyperactivity disorder syndrome	Model	3265.931	7	466.562	8.253	0.001**
		y-intercept	662.176	1	662.176	11.713	0.001**
		Group	2197.818	3	732.606	12.959	0.001**
		Pre test	62.802	1	62.802	1.111	0.295
Attention deficit / hyperactivity disorder syndrome- Teacher form	Child's behavior in class	Model	958.638	7	136.948	6.299	0.001**
		y-intercept	247.194	1	247.194	21.511	0.001**
		Group	139.729	3	46.576	4.053	0.010**
		Pre test	30.067	1	30.067	2.616	0.110
	Group participation and collaboration	Model	88.305	7	12.615	6.411	0.001**
		y-intercept	10.903	1	10.903	5.541	0.021**
		Group	64.912	3	21.637	10.996	0.001**
		Pre test	0.050	1	0.050	0.025	0.874
	Attitude toward the authorities	Model	115.151	7	16.450	3.786	0.001**
		y-intercept	90.228	1	90.228	20.766	0.001**
		Group	49.073	3	16.358	3.765	0.014*
		Pre test	17.859	1	17.859	4.110	0.046*
	Total score	Model	813.751	1	813.751	37.422	0.001**
		y-intercept	648.535	3	228.178	10.496	0.001**
		Group	89.974	1	89.974	4.139	0.046*
		Pre test	194.569	7	27.796	2.419	0.028*

groups, Bonferroni's test was used and the results are presented below.

The data in **Table 9** shows that individual counseling is effective on the attention deficit / hyperactivity disorder syndrome in the parents' form and teachers' form and all its components. The results also showed that group counseling was effective on the ADHD syndrome in the parent form, but in the teachers' form, only in the component of group participation and collaboration and total score of this test there was difference with control group and in the components of behavior in the classroom and attitudes toward authorities there is no difference with the control group. Additionally, the results showed that parent education also had an effect on reducing attention deficit / hyperactivity disorder syndrome in the parent form, but in the teachers' form only in the component of group participation and collaboration and the total score of this test a significant difference with the control group is observed. In addition, comparison of means shows that there is no significant difference between the different methods of cognitive-behavioral therapy, namely, individual counseling, group counseling and parent education in reducing the attention deficit / hyperactivity disorder syndrome in parents and teachers' form.

Table 9. Bonferroni's test results between the three groups in the hyperactivity syndrome test of the parent form and teachers' form and its components

Variable	Component	Group 1	Group 2	MD	Error SD	P
Attention deficit / hyperactivity disorder syndrome-Parent form	Attention deficit / hyperactivity disorder syndrome	Individual counseling	Group counseling	-2.648	2.778	1
			Parent education	-0.582	2.542	1
			Control	-14.949	2.643	0.001
		Group counseling	Individual counseling	2.648	2.778	1
			Parent education	2.066	2.579	1
			Control	-12.301	2.737	0.001
		Parent education	Individual counseling	0.582	2.542	1
			Group counseling	-2.066	2.579	1
			Control	-14.368	2.737	0.001
Attention deficit / hyperactivity disorder syndrome-Teacher form	Child's behavior in class	Individual counseling	Group counseling	-2.324	1.253	0.406
			Parent education	-1.142	1.146	1
			Control	-4.087	1.191	0.006
		Group counseling	Individual counseling	2.324	1.253	0.406
			Parent education	1.181	1.163	1
			Control	1.764	1.234	0.944
		Parent education	Individual counseling	1.142	1.146	1
			Group counseling	-1.181	1.163	1
			Control	-2.945	1.268	0.138
	Group participation and collaboration	Individual counseling	Group counseling	-0.402	0.518	1
			Parent education	-0.572	0.474	1
			Control	-2.630	0.493	0.001
		Group counseling	Individual counseling	0.402	0.518	1
			Parent education	-0.170	0.481	1
			Control	2.228	0.511	0.001
		Parent education	Individual counseling	0.572	0.474	1
			Group counseling	0.170	0.481	1
			Control	2.058	0.525	0.001
	Attitude toward the authorities	Individual counseling	Group counseling	-0.759	0.770	1
			Parent education	-1.081	0.705	0.777
			Control	-2.374	0.733	0.011
		Group counseling	Individual counseling	0.759	0.770	1
			Parent education	-0.321	0.715	1
			Control	-1.615	0.759	0.221
		Parent education	Individual counseling	1.081	0.705	0.777
			Group counseling	0.321	0.715	1
			Control	-1.293	0.780	0.609
	Total score	Individual counseling	Group counseling	-3.485	1.723	0.281
			Parent education	-2.795	1.576	0.482
			Control	-0.092	1.639	0.001
		Group counseling	Individual counseling	3.485	1.723	0.281
			Parent education	0.690	1.599	1
			Control	-5.607	1.697	0.009
		Parent education	Individual counseling	2.795	1.576	0.482
			Group counseling	0.690	1.599	1
			Control	-6.297	1.744	0.003

DISCUSSION AND CONCLUSION

The purpose of this study was to investigate and compare the efficacy of different cognitive-behavioral therapies on reducing attention deficit / hyperactivity disorder syndrome. The findings of this study showed that individual counseling has a significant effect on reduction attention deficit / hyperactivity disorder syndrome in parents' form and teachers' form and in all components of behavior in the class, group participation and collaboration, and attitude toward authorities and reduce ADHD symptoms. Also, the findings of this study showed that group counseling and parent education only affect the attention deficit / hyperactivity disorder syndrome in the parent form and is effective on total score and component of group participation and collaboration and reduce this syndrome. These results are consistent with the results of the studies conducted by Thyagarajan (1986), Battagliese et al. (2015), Huan et al. (2015), Young et al. (2016), Hirrikoski et al. (2015), Narimani et al. (2015), Ghazayee et al. (2012), suggesting that cognitive-behavioral therapy is effective in reducing the symptoms of ADHD. In explaining these findings it can be argued that, since cognitive-behavioral therapy is believed that the cause of most behavioral problems should be sought in cognitive errors and irrational beliefs, and accordingly, therapists in this area improve people's behavior through a change of thought and belief (Shafi'e Abadi and Naseri 2004). Therefore, it can be argued that having the wrong beliefs and assumptions about the situation and events of the environment will cause the incomplete process and function of the individual, especially for children with ADHD to be continued, and reduces the scope of the effect of this disorder, therefore, psychological treatments based on the modification of people's beliefs can play a significant role in how the individual behaves due to provide a basis for correcting beliefs of individuals in different situations. In the case of children with ADHD, it should be stated that, as Berkeley (2000) suggests, children with ADHD have difficulty in response inhibition, and the results of some studies suggest that children with attention deficit / hyperactivity disorder have deficiency in the frontal areas, which are the center of inhibition of behavior and resistance to responsiveness, control the level of activity and resistance against distraction (Berkeley, 2000).Therefore, providing solutions and techniques that can be used in cognitive-behavioral therapy can also play a role in reducing the syndrome of this disorder. In this regard, the treatment protocols used in this study could also be mentioned, which included techniques for the prevention and recognition of ADHD, such as the preparation of behavioral contracts, the use of self-monitoring techniques, training appropriate communication with others by correcting irrational beliefs and cognitive errors. Concerning the efficacy of group therapy, it can also be noted that in the group therapy, this opportunity is provided to the individual, which, in addition to individual practice of cognitive-behavioral techniques, interacts with other groups, and receive feedback on his or her behavior, while the group as a whole increases motivation, and because the child communicates with

those who have a disorder like him, he/she feels united, and positive dimensions are added to their treatment. In explaining the effect of parent education, it can also be argued that parents as people close to the child play a major role in child changes, this can be due to factors such as reduced stress, better understanding of attention deficit / hyperactivity disorder, more effective planning to communicate with children with this disorder and to learn and use psychological and behavioral techniques to provide a more effective way for parents to communicate with the child and prevent complications associated with attention deficit / hyperactivity disorder syndrome such as Oppositional defiant or conduct disorder and improving these symptoms.

In addition, this finding also suggests that cognitive-behavioral therapy has a pedagogical dimension and has been able to educate parents about the positive control of children, the preparation of behavioral contracts, the preparation of a list of responsibilities, how to shape behavior in children and so on, provide conditions for parents to gain more efficiency in the interaction and control of children with ADHD. Meanwhile, the findings of this study showed that there is no significant difference between the three methods of cognitive-behavioral therapy, namely, individual counseling, group counseling and parent education in reducing the attention deficit / hyperactivity disorder syndrome. In a meta-analysis, Abedi et al. (2012) examined the effect of psychosocial treatments on reducing the syndrome of children with ADHD and reported that all psychological treatments used, has improved the symptoms of this disorder. Also, by examining the statistics and the reported impact of these treatments, it has been shown that group therapy, parental education, and individual therapy have been approximately similar to reducing the syndrome of attention deficit / hyperactivity disorder. In comparing different cognitive-behavioral therapies on other disorders, research has shown that in eating disorders (Rickar et al. 2010), in the treatment of obesity (Kersi et al. 2007) in the treatment of depression (Mohammadi et al. 2012), there is no significant difference between different methods of cognitive-behavioral therapy. The fundamental concept in all types of cognitive-behavior therapies is that our thoughts and feelings have a fundamental role in our behavior. In this approach therapeutic strategies emphasize the change of thoughts, attitudes and perceptions, and the replacement of rational thoughts. The main assumption of this therapeutic approach is that the correction of maladaptive cognition will lead to behavior change. In this therapeutic approach, self-monitoring exercises, stress reduction skills training, cognitive reconstruction techniques training, and the replacement of rational thoughts instead of irrational thoughts are among the techniques of this therapy. In this therapeutic approach, students learn how to recognize or change the destructive or intrusive thinking patterns that has a negative impact on their behavior. It also through training how to make behavioral contracts, controls people which is especially useful for children with attention deficit / hyperactivity disordered who have difficulty controlling the response control. Therefore, in explaining this finding, it can be said that since all three therapies come from same theoretical approach, one can expect to have similar functions in the field of making changes. It is also possible to refer to the therapeutic protocol of these three methods, which is designed for ADHD children, similar techniques have been taught in all three treatment protocols. Finally, it can be concluded that cognitive-behavioral therapy with three methods of individual counseling, group counseling and parent education have been effective in reducing ADHD syndrome, and the symptoms of this disorder and compared to each other, there is no significant difference between these three therapies.

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