



The effectiveness of Group Interventions based on Parent-child Relationship on Promoting Child-rearing in parents of Children with Attention-Deficit Hyperactivity Disorder, aged 6-11 years

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Parent-child relationship and communication and child-rearing practices are one of the most important family factors that affect the mental health of the family. **Objective:** The present study was conducted in order to investigate the effectiveness of family-oriented psychological interventions (parent-child-based education) on improving child-rearing in parents of ADHD children aged 6-11 years old. **Methodology:** In a quasi-experimental study using pre-test and post-test design with three experimental groups of Drug therapy, combined (drug therapy and family-oriented intervention) and family-oriented, mothers of 30 children with ADHD disorder were selected by multi-stage cluster sampling method; these subjects were randomly selected from the educational districts of Tehran. The combined and family-oriented groups were trained in a parent-child relationship group for 10 sessions and the drug therapy group received only medication. Subjects were assessed by Alabama parenting scale in two stages (before intervention and after intervention). Data was analyzed using covariance analysis. **Findings:** The results of the present study showed that the implementation of a parent-child-based educational program resulted in a significant improvement in child-rearing methods of parents with ADHD children in both the combined and family-oriented group. **Conclusion:** Parent-child relationship education is effective in improving child-rearing methods in parents of ADHD children; so, it is suggested that therapists use this method to help parents of this particular group of children.

INTRODUCTION

Attention deficit hyperactivity disorder (ADHD) is one of the most common childhood disorders characterized by a persistent distraction of attention and impulsivity more severe and common than what is witnessed among normal children; this deficiency of attention is disproportionate to the level of the development of the individual (Johnson, 2012). On the other hand, the most common psychiatric disorder in childhood is ADHD in terms of referral to health care centers (Bussing et al., 2012; Alyahyawi Huda Yahya, 2016). The evidence has shown that the prevalence of attention deficit hyperactivity disorder has increased significantly over the past two decades (Safer, 2012). Various studies have reported different prevalence rates for this disorder: 3-9% in Spencer et al., (2010), 18.1% in Mhalla et al., (2017), 8% in Arjomandi et al., (2016), and 16.2 in Hamzeloo et al., (2012). The majority of children with ADHD experience anxiety disorder in adolescence (Liu et al., 2014) and the problems of the evolution of identity and social communication (Jones and Hess, 2017) and the likelihood of being rejected by their friends and peers (Rokeach &

Wiener, 2017). They are, also, exposed to high-risk behaviors, such as smoking (Biederman et al., 2017) and anti-social behaviors.

There are several evaluation techniques that can be used to recognize symptoms. Each method provides valuable information and a comprehensive set of tasks used to identify a wide range of problems that need to be addressed (Mousavi and Jamali, 1395). There is currently a consensus that the cause of ADHD is the complex interaction of neuroanatomical and neurochemical systems (Kaplan and Saduk, 2007). The factors that have been suggested for this disorder are the birth month (Karlstad, 2017), the parental psychological characteristics (Godovich, 2017), in particular the alcohol consumption and the parents' antisocial behavior (Molina, 2016) exposure to toxins prior to birth, premature birth, and pre-natal mechanical damage to the fetus's nervous system, edible additives, dyes, preservatives and sugars (Kaplan and Saduk, 2007) and the interaction of hereditary, personality and temperamental factors, pre and postpartum factors, and the interaction between the afore-mentioned factors with environmental factors (such as parenting techniques, rehabilitation or punishment, and educational factors (Mirnsab, 2013; Gul, 2016).

Moen et al., (2016), Williamson et al., (2017), Shameem Agha (2017) believe that mothers of attention deficit hyperactivity disorder children experience anxiety more frequently in comparison with the

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mothers of healthy children. One of the most important factors affecting childhood disorder is how parents behave with their child. If parents do not know how to deal with a child with ADHD and if they do not use better parenting practices, there is the chance of the child's development of more severe disorders (Agha and Langley, 2017; Peiman Nema, 2013). In this regard, education on the modification of mothers' behavior decreases the overactive symptoms and the defect of children's attention (Pasha, 2016; Shooshtari et al., 2014; Aghebati et al., 2014; Rimestad, 2017; Nomanbhoy and Hawkins, 2017; Ameneh Shaykh, 2018).

Parent-child relationships and communications and child-rearing practices are one of the most important family factors that affect the mental health of the family (Kazdin & Whitley, 2006; Salisbury, 2017). When there is mutual support between parents, parents spend more time with their children and their relationship with children is more sensitive and more enriching; additionally, there will be love and affection between parents and children (Edward et al., 2010). Shabani and Moiiidi (2017) show that there is a negative relationship between responsibility, having expectations inappropriate to children's abilities, and the affection of parents with depression in girls, and there is a positive relationship between punishment and blaming parents for depression in girls. Parents who feel more responsible toward their children use more involving and positive child-rearing techniques, despite problems their ADHD children might develop for them (Goldstein et al., 2007). Parents of ADHD children are less willing to, or capable of, adapt flexible child-bearing techniques (Nomanbhoy & Hawkins 2017, Alizadeh, 2002). Often, these parents experience a lot of problems in managing their child (Shelton et al., 1996). Most parents of ADHD children report frustration and stress in their child's upbringing (Williamson, 2017; Ashley, 2018). Increasing self-efficacy and reducing negative child-rearing techniques might mitigate ADHD symptoms (Ramsey, 2017). Having a child with ADHD has a negative relationship with problem solving skills and family support (Hoza et al., 2000). Neuroticism affects parents' greater desire to assess negative behaviors of children with attention deficit hyperactivity disorder and, on the other hand, their type of interaction with their children (Goldstein et al., 2007). Parents who have high sense of co-operation, help, self-sacrifice, honesty and self-sufficiency are not punitive and use regular and steadfast and logical methods of effective and positive education (McCrae and Costa, 2004). Johnston and Jesse (2007) showed that there is a mutually influential relationship between child behavior and parent behavior.

Therapeutic game is an intervention the underlying assumption of which is that the relationship between the child and the parent is the main treatment that leads to the reduction of symptoms. Also, therapeutic games are direct interventions that, due to the nature of the intranasal, lead to objectification and thus increase the effectiveness of intervention (Stulmaker & Ray, 2015). Through the game, the child can express his opposite and opposing feelings, thoughts and beliefs (Lambert, 2002; Wethintone et al., 2008). Parent-child-oriented group-based interventions (CPRTs) focus on improving parent-child relationships through playing, and based on the assumption that improving this relationship through the game improves the child's emotional and behavioral problems. In accordance with this therapeutic approach, introduced by Landreth and Bratton (2010), parents, as therapists, learn how to create a warm and intimate environment at home at tertiary sessions, with a non-judgmental, indeterminate and original relationship with their child, thus creating a sense of safety in their child. This approach focuses on parents as an intermediary to improve and improve children's behaviors. Drug interventions alone are not effective in reducing ADHD symptoms and parent interactions with their children

(Waxmonsky, 2015). Research has shown the effectiveness of CPRT in improving the symptoms of ADHD children (Sabiziyan et al., 2016; Ali Akbari et al., 2016; Pirmia, 2015; Mina and Hossein Fard, 2015; Long, 2016). This method has been effective in reducing parental stress (Kidron & Landreth, 2010; Tophen et al., 2011; Timer, 2012; Lyndo et al., 2012; Leung and Tsang, 2017; Maqoom et al., 2017; Afshar et al., 2017); it, also, led to improved parent-child relationships (Ray et al., 2009).

Therefore, the present study was conducted in order to investigate the effectiveness of family-oriented psychological interventions (parent-child-based education) on improving child-rearing in parents of ADHD children aged 6-11 years old.

METHOD

The present study is a part of semi-experimental research in terms of data collection method and is a fundamental research component in terms of purpose. The design used in this study was pre-test and post-test with three experimental groups which have been approved by following ethical code IR.AJUMS.REC.130.95. Sampling was made after approval of the project and acknowledgement by the Ethical Committee of the Ahvaz City University of Medical Sciences with the code pond agreement of the authorities of Golestan Hospital. Sampling was made after approval of the project and acknowledgement by the Ethical Committee of the Ahvaz City University of Medical Sciences with the code IR.AJUMS.REC.139.96, and agreement of the authorities of Golestan Hospital.

Study population, sample, and sampling methods

The research population includes all mothers of children aged 6-11 years with attention deficit hyperactivity disorder (ADHD) in Tehran. In this research, multi-stage cluster sampling method was used. Initially, District 1 Education and Training Office in Tehran were randomly selected; then, a boys' elementary school was chosen randomly from the elementary school boys in that area. Finally, the students of all classes were evaluated by the Connors questionnaire, and 30 students randomly obtained high grades. The subjects were divided into three groups of 10, (Drug therapy, combined (drug therapy and family-oriented intervention) and family-oriented.

In this study, 30 subjects (10 in drug therapy group, 10 in combined-treatment, and 10 in family-oriented intervention group) were analyzed. The content of these training sessions is based on improving the parent-child relationship and creating empathy and acceptance by the parents for the child. The practical training program in this therapeutic approach consists of following 10 sessions.

The first and second sessions include the importance of the game, the rules and procedures for playing parental games with the child at home. Do's and Don'ts of the game's sessions are taught and the type of toys required for the sessions, venue and play time is introduced with the child. The third and fourth sessions include teaching parents how to respond to the emotions and feelings of the child. The fifth session focuses mainly on the skills parents have learnt in relation to the child's play. The sixth and seventh sessions were devoted to training limiting skills for inappropriate child behavior or to defy the rules of the game and to educate the child about their choice of obeying or breaking the rules. The eighth session re-examines the exercises related to the implementation of the skills learned in the previous sessions and generalizes them to off-site situations. Responses to self-esteem in relation to the behaviors and efforts that the child is doing are one of the other issues discussed at this meeting. The ninth session addresses the

major problems of parents in some skills and emphasizes the continuation of the sessions on a weekly basis and the generalization of skills. Dancing and storytelling is also one of the exercises discussed at this meeting. The final session will also highlight the strengths of parents in relation to the first meeting, reviewing the initial problems of parents and the improvements they have found. Polls about the effectiveness of the parenting method and setting up a plan for continuing parent group meetings and communicating with the therapist, as needed, are among the other issues discussed at the closing meeting (Landreth 2006).

Data collection tools

1. Clinical interviews: In this research, subjects were interviewed by psychiatrist and psychologist.
2. Connors parent questionnaire: The questionnaire consists of 26 questions which are graded from 0 to 3 in the Likert scale, and measures such as over-active and neglected and decentralized by the parents. Connors et al., (1999) reported a reliability of this scale to be 90%. The validity of this questionnaire was confirmed by the Institute of Cognitive Sciences (0.85) (Alizadeh, 2005).
3. Alabama parenting questionnaire: The questionnaire compiled 42 questions from Shelton, Freak and Button (1996) to measure five parenting areas, including: physical punishment, sustainable discipline, poor supervision, involvement in activities and positive parenting. Questions have been adjusted on the 5-degree Likert scale, from never to always, and the internal consistency of 0.46-0.85 is achieved by McMahon et al., (1997). The reliability coefficient of Cronbach's alpha was 0.62 for the whole scale and 0.63 to 0.79 for the sub-scales, indicating a medium to high reliability.

Data analysis method

To analyze the statistical data, descriptive statistics of mean and standard deviations and inferential statistics of single-variable covariance analysis (ANCOVA) and multiple Bonferroni tests were used. Finally collected data was analyzed by SPSS, version 23.

FINDINGS

Section one: descriptive statistics

The demographic data from the sample group showed that the mean age of the children of the participants was 8.53 with a standard deviation of 1.52. The highest frequency of children ages is 8 years.

As it is seen in Table 1, the average score in the pre-test phase in punishment, discipline, and poor supervision in the groups is higher than the mean in the post-test phase. These differences are more obvious in the combined group. The mean of involvement variables in activities and positive parenting in the pre-test stage in the groups is less than the mean at the post-test stage. These differences are more evident in the combined and family-oriented groups. It should be noted that lower grades in each of the variables of punishment, discipline, and poor supervision indicate less verbal and physical punishment, greater stability in child upbringing, and more monitoring of child actions. High scores in involvement in activities variables in activities and positive parenting indicate the greater participation of parents in recreational and educational activities of the child and the parents' encouragement and praise for positive children's actions.

Second part: Inferential Findings

Using the covariance analysis test requires some basic assumptions that include homogeneity of variance, homogeneity of continuity and

homogeneity of regression slope. The results are presented in the following order.

Homogeneity assumptions of variances: In this study, Levene's test was used to test the homogeneity of variances. The results of the Levene test in Table 2 show that the variables of the research have variance homogeneity, because the value of F is not significant in each of the variables.

Regression tilt homogeneity assumption: Covariance analysis is based on the assumption that the regression coefficient between the independent variables and the summation (pre-test) should not be significant. Table 3 shows that the F value for each of the variables is not significant. Therefore, covariance analysis can be used to analyze data. Table 4 summarizes the results of single-variable covariance analysis in this study.

According to Table 4, the F value for physical punishment is 10.9, 8.23 for sustained discipline, and 25.18 for poor monitoring, 14.9 for involvement in activities, and 15.6 for positive parenting during pre-tests stage. The value of F in all variables is significant at the level of 0.01. The amount of variance explained by the dependent variable was 0.27 for physical punishment, 0.24 for sustained discipline, 0.49 for poor monitoring, 0.50 for involvement in activities, and 0.37 for positive parenting.

The F test values for independent variables turned out like the followings: 7.7 for physical punishment, 11.9 for sustained discipline, 8.3 for poor monitoring, 13.14 for involvement in activities, and 54.2 for positive parenting, all of which turned out to be significant at the significance level of 0.01. The explained variance value for variables was 0.37 for physical punishment, 0.47 for discipline, 0.39 for poor monitoring, 0.51 for activity involvement, and 0.80 for positive parenting.

Bonferroni multiplication test is used to test the significance of the difference between the groups average in Table 5. The data in tables 1 and 5 show that the mean score of the combined group (13.9) and the mean CPRT (14.3) were lower than the drug therapy group (18.3) and the level of 0.05 was significant in the punishment variable. There is no statistically significant difference between the mean of the combined group and the mean CPRT. In general, the mean combined group and CPRT are lower than the drug therapy group.

In regard with sustained discipline variable, the mean scores of the combined group (16.8) and the mean CPRT (14.2) were lower than the drug therapy group (22.5) and the level of 0.05 was significant. There is no statistically significant difference between the mean of the combined group and the mean CPRT. In general, the mean combined group and CPRT are lower than the drug therapy group.

In regard with poor monitoring variable, the mean score of the combined group (14.2) and the mean CPRT (15.9) were lower than that of the drug therapy group (17.9) and the level of 0.05 was significant. There is no statistically significant difference between the mean of the combined group and the mean CPRT. In general, the mean combined group and CPRT are lower than the drug therapy group.

In the domain of the involvement in activities, the average score of the combined group (23.9) was higher than and the mean of the CPRT group (16.7) and the drug therapy group (18.2%) and this difference was significant at the level of 0.5. There is no statistically significant difference between the mean of the drug therapy group and the CPRT group. In general, the average group of CPRT and drug therapy groups is higher.

In the positive parenting variable, the mean score of the combined group (30.1) and the mean CPRT (26.4) were higher than that of the

Table 1 Descriptive Characteristics Child-rearing Techniques in Parents of Children with ADHD

Groups	Variables	Pre-test		Post-test	
		Mean	SD	Mean	SD
Drug therapy	Physical Punishment	22	2.5	18.1	2.4
Combined	Physical Punishment	21.7	4.9	13.6	3
Family oriented	Physical Punishment	23.9	4.3	14.3	3.9
Drug therapy	sustainable discipline	24.6	3.3	23	3.5
Combined	sustainable discipline	23.2	5	16.9	3.2
Family oriented	sustainable discipline	23.3	4.5	14.1	5.7
Drug therapy	poor supervision	20.2	1.9	18.2	2.2
Combined	poor supervision	9.7	2.3	14.1	3
Family oriented	poor supervision	19.9	3	15.9	2.9
Drug therapy	Involvement in activities	15.9	2.6	17.7	2.3
Combined	Involvement in activities	16	3.5	23.5	4.6
Family oriented	Involvement in activities	17.7	2.3	17.7	4.6
Drug therapy	Positive parenting	20.5	3.5	17	2.4
Combined	Positive parenting	19.6	6	30.2	4.2
Family oriented	Positive parenting	18.1	4.8	25.8	4.2

Table 2 Levene's test to verify homogeneity of variances

Dependent variable	F	1st degree of freedom	2nd degree of freedom	3rd degree of freedom
Physical punishment	4.4	2	27	0.06
Sustained discipline	1.205	2	27	0.315
Poor monitoring	2.78	2	27	0.079
Involvement in activities	3.1	2	27	0.08
Positive parenting	3.05	2	27	0.06

Table 3 Homogeneity analysis of regression slope of pre-test and independent variables

variable	Total squared	Mean squared	F	Deg. of freedom	Sig. level
Physical punishment	2.64	1.32	0.163	2	0.851
Sustained discipline	32.16	16.08	0.09	2	0.35
Poor monitoring	5.54	2.77	0.85	2	0.526
Involvement in activities	3.51	1.75	0.15	2	0.858
Positive parenting	18.7	9.38	1.04	2	0.369

Table 4 The results of covariance analysis of post-test scores in three experimental groups, with pre-test score (compromise)

Variable	Source	Total squared	Deg. of freedom	Mean squared	F	correlation
Physical punishment	Pre-test	83.11	1	83.11	10.9	0.27
	group	117.16	2	58.58	7.7	0.37
	Error	197	26	7.57		
Sustained discipline	Pre-test	121.58	1	121.58	8.23	0.24
	group	351.45	2	175.7	11.9	0.47
	Error	383.7	26	14.7		
Poor supervision	Pre-test	101.03	1	101.03	25.18	0.49
	group	68.57	2	34.28	8.3	0.39
	Error	106.36	26	4.09		
Involvement in activity	Pre-test	160.37	1	160.37	14.9	0.50
	group	281.36	2	140.6	13.14	0.50
	Error	278.32	26	10.7		
Positive parenting	Pre-test	141.9	1	141.9	15.6	0.37
	group	981.2	2	490.6	54.2	0.8
	Error	235.2	26	9.04		

Table 5 Mean difference and mean deviation error of groups

Variable	Drug therapy and combined		Drug therapy and family-oriented		Family-oriented and combined	
	Mean	Mean error	Mean	Mean error	Mean	Mean error
Physical punishment	4.37	1.23	4.01	1.25	-0.35	1.26
Sustained discipline	5.72	1.73	8.27	1.73	2.54	1.7
Poor monitoring	3.7	0.9	2.06	0.9	-1.64	0.9
Involvement in activities	-5.71	1.46	1.51	1.51	7.22	1.5
Positive parenting	-13.6	1.35	-9.9	1.37	-3.7	1.35

drug therapy group (16.4) and this difference was significant at the level of 0.5. There is no statistically significant difference between the mean of the combined group and the mean CPRT. In general, the mean combined group and CPRT are lower than the drug therapy group.

DISCUSSION

These findings are consistent with the results of the following research: Amiri et al., (2015), Nejati et al., (2016), Amir et al., (2013), Mousavi et al., (2016), Afshar et al., (2017), Bronzeuor et al., (2013) Long et al., (2017), Sokars et al., (2015), Ros et al., (2017), and Leung et al., (2017).

The results of Amiri et al., study (2015), which was conducted to investigate the efficacy of parental-child-based game therapy based on parenting style, indicated that this method improved parenting techniques.

The results of Nejati et al., (2016) study indicated that the significant reduction (improvement) of the dysfunctional discipline patterns and the change in the parenting of the mothers (except work) in the experimental group were compared with the intervention group. Amir et al., (2012) showed that the subjects who received the training, in comparison with other subjects, increased the use of authoritative parenting style and showed a significant reduction in the use of authoritarian parenting style.

The results of Mousavi et al., (2016) study showed that providing education on group interventions (parent-child-based therapy games) on mothers with children with ADHD was quite effective in improving the overall parenting of mothers and reducing the subscales of over-reaction and verbal beliefs; however, it failed to have any significant effects on the subscale of negligence.

Afshar et al., (2017) showed that treatment of educational game therapy based on the parent-child relationship was effective in the components of both parental and child-care scales. Parental stress, with the exception of the acceptability subscale, had a significant downfall. Bruinshever et al., (2013) showed that parenting therapy has been effective in changing parents' thoughts and has generated a positive change in relation to parents and child behavioral problems. Long et al., (2017) showed that this type of intervention has led to positive parenting experiences.

The results of Sokars et al., (2015) study show that parents who have benefited from this kind of treatment have quite taken advantage from parental experiences. In addition, this treatment has led to a change in the perception of parental techniques. Leung et al., (2017) found that parent-child interaction therapy improves parenting methods in the control group's mothers.

In explaining the above findings it can be said that the role of environmental and psychological factors on the severity and specific characteristics of the disorder should not be ignored. In the same vein (Kachlach 2001 quoting Mash and Barclay, 2003), the lack of accountability of parents and severe punishment increases the risk of maladaptive behaviors. Other factors, such as cultural, environmental and emotional deprivation, disrupt the normal development of the child. Studies have shown that ADHD disorder affects the interactions of these children with their parents and also affects the way parents respond to children. The lack of attention, impulsiveness and high activity of children with ADHD cause these children to fail to meet their parents' demands and these children are generally involved in chronic conflicts with their parents (Kar, 1999). Parental experiences, in turn, are effective in exacerbating or developing ADHD symptoms (Miller, 2012).

In the therapeutic approach of the treatment game based on the parent-child relationship, the family, as a therapeutic agent, learns in the

therapeutic sessions how to create a warm and intimate environment in the home and establish a non-judgmental, unconditional and original relationship with their children to enable them to feel comfortable at home. On the other hand, the emotional relationship between parent and child is effective in the treatment process and parents can be effective agents if they acquire certain skills. Landreth (2006) argues that parents can achieve good understanding and acceptance of child behavior by learning skills such as playing. The focus in this therapeutic approach is on improving the child-parent relationship, the child's inner self and its potential for enrichment and flourishing; in regard with parents, the main objectives of such a procedure would be understanding and accepting the emotional world of a child, gaining a realistic and patient attitude toward oneself and the child, increasing insight and awareness in relation to the child and on how to create a non-judgmental, receptive, and perceived child, and ultimately helping parents to enjoy the role of parents (Landreth, 2006).

CONCLUSION

The results of the present study indicated that family-centered psychological interventions (parent-child relationship-based therapy) improve parenting techniques.

The parental-child-based treatment method has led to a more appropriate self-assessment of parents and thus an incentive to improve parenting. This efficient belief according to which "we all make a mistake but we can correct it; the way we work to offset our mistake is important" would fall useful during the course of life. Parental self-awareness, having enough knowledge about the disease, and the emergence of a sense of adequacy in the knowledge of the variability of symptoms can significantly improve the acceptance of treatment in all areas. The high motivation increases the ability of parents to cooperate and persevere in the implementation of the principles of behavior they learn during training sessions. Parents are trained in the child-friendly parenting and child-friendly practices, and this reduces, both, child's problems and communication problems between parents and the child. Another key to changing the parent-child relationship-based therapy program is to train the teacher to coordinate the language of the language and body language with the mothers during the initial sessions of the course with special exercises during the course, which indicates the interest and attention of parents (mothers) to the children; when parents let the children feel that they have understood and accepted their needs, emotions and feelings and have experienced a new type of empathic relationship, they have taken an important step in improving the child's behavioral problems and improving maternal parenting skills.

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