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The Effectiveness of Parent Management Training in Improving Parental Stress of Children with Attention Deficit Hyperactivity Disorder

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A B S T R A C T

The aim of this study was the effectiveness of parent management training in improving parental stress of children with attention deficit hyperactivity disorder. The present research is a single case study. Subjects were three mothers that had ADHD children. In order to control the impact of drug, children were selected among those who at least 6 months were treated with *Ritalin*. All the three subjects were trained under 8 sessions of behavioral change for their ADHD children. These trainings were individually based on weekly session. Subjects were evaluated before intervention, after intervention and one month later in the follow up stage, using: CSI-4, DBI-II and PSI. Results showed parent management training caused symptoms attention deficit hyperactivity disorder and parent stress improvement. Parent motivation and involvement had a significant role in treatment process. The results showed that parental stress affects by children's behavior problems because the results of the impact of parental education on improving the behavioral problems of subjects in this study were positive.

Keywords: Attention deficit hyperactivity disorder, Parenting Stress Index, Parent Management Training.

INTRODUCTION

Attention Deficit Hyperactivity Disorder is one of the most common childhood disorders. People with this disorder suffer penetrating, long-term and strong problems in three areas of focus, activity and momentum[1] and many of these children are affected with behavioral, emotional and learning disorders [2]. Parents of children with Attention Deficit Hyperactivity Disorder experience higher levels of stress related to parenting and have feelings of inadequacy. Marital conflict has increased among these people and depression levels of these mothers are high [3].

Early intervention and trace of the problem can decrease the frequency and intensity of children's behavioral and emotional disorders in the current society. The method which could be determined based on child-parent relations in

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conditions of extreme stress should be considered as an important part of prevention programs. This point that children are referred to specialized mental health centers usually at the beginning of elementary school shows the importance of early prevention programs since the delay in recognizing the problems of one to five years old children often leads to effective widespread negative position on the development of the child and create almost insurmountable difficulties in the way of their material and spiritual rehabilitation or therapy. So, a tool which enables early recognition of such possible compromised situations will lead to more efficient and effective interventions[4].

Attention Deficit Hyperactivity Disorder treatment plan can be divided from directly one-intervention treatments to multiple complex interventions. Nowadays, medication with motivation drugs, parental education behavior programs, class interventions and summer treatment programs are the strongest interventions that have gained a good empirical support. Biofeedback therapies, neuro-feedback, diet, allergies treatment and play therapy have also been suggested to gain little support in the control measures (Johnson, McAlister, and Readers, 2005). In recent decades, behavioral interventions have had a high level of management support among the current medical interventions[5] and parent management training is been increasingly paid attention to in the treatment plan and an extensive and appropriate empirical literature is obtained in this regard[6, 7]. Parent Management Training (PMT) designed based on social learning models is an effective and usable way in the treatment of children with maladaptive behaviors[8]. In PMT, parents are taught how to increase positive interactions with their children and reduce conflicts and avoid inadequate parenting styles. The importance of parents' presence is that parents will learn quickly and well this method and can be run in the natural setting of home [5, 9, 10].

It is been tried in this survey to present the Parent Management Training (PMT) which is designed based on social learning patterns as an effective and usable method in the treatment of children with this disorder. Obviously, improving parenting and educating skills of parents and modifying their behavior in dealing with children and teaching correct and efficient coping strategies will be an effective step in solving current problems and preventing future social problems.

METHODOLOGY

This study is quasi-experimental based on objective and target educational interventions and the research design is pre-test, post-test and follow-up with three subjects without the control group. The subjects were evaluated once before training methods, once they are reassessed after eight sessions of training and have been assessed for the third time in a month after the end of training sessions. In this study, the "available samples" sampling is used to select the sample. The participants of this plan have been three mothers of children with Attention Deficit

Hyperactivity Disorder. Children were selected from children with ADHD who were under treatment with Ritalin for at least 6 months in order to control the influence of medication. Then, all participants were trained for 8 sessions which were held individually and weekly.

Table1. Children's characteristics

Child	Age	Sex	Education	Social-economic level
First	10	Male	Fourth grade	Middle class
Second	10	Male	Fourth grade	Middle class
Third	11	Male	Fifth grade	Middle class

The research tools was as follows:

1. Clinical interview based on DSM-IV-TR: the clinical interview based on DSM-IV-TR was used to ensure the accuracy of the subject selection and on its basis, parents are asked specific questions in order to determine normal children from the diseased ones.

2. Beck Depression Inventory (BDI-II): Beck Depression Inventory is one of the most appropriate tools to assess the state of depression. The questionnaire contains 21 articles which measures the physical, cognitive and behavioral symptoms of depression. Each article contains 4 options which are scored based on 0 to 3, and determine varying degrees of depression from mild to severe. The maximum score on this questionnaire is 63 and the minimum is zero. Beck Depression Inventory Second Edition (BDI-II) is the reviewed Beck Depression Inventory which has been developed to measure the intensity of depression (Beck, Brown, Steer, 2000). The revised Beck Depression Inventory is more consistent with DSM-IV compared to the basic form. In addition, the second edition of this questionnaire covers all elements of depression based on the cognitive theory of depression. Beck Depression Inventory (Second Edition) does not have four articles of the previous edition and other articles have been added to the questionnaire instead of the previous ones. Two articles (16 and 18) in the questionnaire have also been modified so that they are more sensitive to depression. This questionnaire is usable in people with more than 13 years old.

The conducted psychometric studies on the second edition of this questionnaire indicate that it has a favorable validity credit. Generally, this questionnaire is a good substitute for the first edition. Beck, Steer & Brown[11] have reported the internal consistency of the instrument as 0.73 to 0.92 with an average of 0.86 and alpha coefficient of 0.86 for patients and 0.81 for non-patients. Moreover, Dobson and Mohammad Khani[12] have obtained alpha coefficient of 0.92 for outpatients and 0.93 for students and test-retest coefficients after a week as 0.93.

3. Parenting Stress Index (PSI): This is a questionnaire by which the importance of child-parents system stress could be evaluated. The questionnaire consists of two parts. The first part is the section about child characteristics that affects the interactive relationship between parents and child (such as mood disorders, hyperactivity or negligence, negligence, and so on). The second part is the one

about the features and dysfunction of parents (depression, feelings of incompetence on the parts of being parents, mothers' reinforcement index, parenting attachment and so on) which effect on the interactive relationships of children and parents. The reliability of this scale has been approved in different tests. For example, the internal consistency of the scale by Cronbach's alpha in a sample of Hong Kong mothers (N = 248) was obtained as 0.93. Exclusively, these coefficients have been 0.91 and 0.85 in the domain of children and the real of their mothers respectively. The discriminant validity of the test has been 0.93 and its simultaneous range in comparison with 5 other questionnaires has been 0.38 and 0.66. In a group of mothers, the overall internal consistency of PSI was obtained as 0.93.

4. Child Symptom Inventory (CSI-4): This questionnaire has been a screening tool for the most common psychiatric disorders the phrases of which have been developed based on DSM-IV diagnostic criteria and consists of subscales such as emotional and behavioral disorders, oppositional defiant disorder and aggressive and non-aggressive behavior disorders. It also includes two checklists of parents and teachers in which the list of behavioral and emotional disorders symptoms-21 have been proposed that contains 11 tables named from A to L. Table A in both the checklists of teachers and parents has 18 questions that are consistent with DSM-IV diagnostic criteria and has 4 intensity (never, sometimes, often, most of the times). The first 9 questions are related to Attention Deficit Disorder and the second 9 questions are related to hyperactivity and impulsivity disorder.

In the first session, research tools including: Child Symptom Inventory (CSI-4), «Beck Depression Inventory (DBI-II) » and «Parenting Stress Index (PSI) » were presented to mothers and the base line of these tests was obtained as the pre-test. Then, mothers were taught 8 sessions of educational intervention. Parent education program consists of 8 individual sessions for mothers of children with ADHD and the duration of each session is one hour. Titles and summaries of the contents of the meetings are as follows:

First session: Introduction to ADHD and related disorders

Second session: how to encourage children

Third session: how to give order to children with ADHD

Fourth session: The use of punishment

Fifth Session: Use deprivation for aggressive behaviors.

Sixth session: control the child's behavior in outdoors environment

Seventh session: doing homework

Eighth Session: Summary of the previous session's research tools were provided again after the end of sessions and were conducted as the post-test.

RESULTS

In this section, the results of the research tools implementation for the pre-test, post-test and follow-up are presented to compare and analyze the findings.

Table 2. Raw and standard scores of the subjects in the CSI-4 with regard to levels of evaluation and subscales

Various evaluation levels		pretest		posttest		Follow-up	
subjects	The kind of disorder/disease	Raw score	T score	Raw score	T score	Raw score	T score
First subject	inattentive hyperactivity disorder	2	45	0	40	0	40
	Hyperactive-impulsive disorder	0	43	0	43	0	43
	combined hyperactivity disorder	2	43	0	41	0	41
	Oppositional defiant disorder	0	40	0	40	0	40
	conduct disorder	0	40	0	40	0	40
	generalized anxiety disorder	2	50	0	43	0	43
Second subject	inattentive hyperactivity disorder	9	61	2	45	0	40
	Hyperactive-impulsive disorder	0	43	0	43	1	45
	combined hyperactivity disorder	9	52	2	43	1	42
	Oppositional defiant disorder	6	59	3	49	1	43
	conduct disorder	9	70	5	56	5	56
	generalized anxiety disorder	5	62	0	43	0	43
Third subject	inattentive hyperactivity disorder	9	61	9	61	7	57
	Hyperactive-impulsive disorder	9	63	9	63	9	63
	combined hyperactivity disorder	18	63	18	63	16	61
	Oppositional defiant disorder	8	65	5	56	6	59
	conduct disorder	4	53	2	46	3	50
	generalized anxiety disorder	7	70	1	46	2	50

Evaluating the first subject's scores after the training sessions showed that educational interventions lead to the reduction of scores in all subscales of Child Symptom Inventory (CSI-4) except for the subscales of oppositional defiance and behavioral disorder which is continued to follow-up level. The reduction of scores in the follow-up level shows that parents have been successful in applying what they have learned because its effectiveness has continued even after the cessation of training.

About the second subject, the effectiveness of parent education is revealed in the post-test which continues to follow-up level except for the subscale of the Hyperactive-impulsive disorder. The results of the third subject after the training sessions showed that educational interventions lead to the reduction of scores in the subscales of oppositional defiant disorder, conduct or behavioral disorder and generalized anxiety disorder.

After a month, the subscales of inattentive hyperactivity disorder and combined hyperactivity disorder reduced with regard to posttest, and subscales of oppositional defiance disorder, behavioral disorder and generalized anxiety disorder have increased.

Table 3. The raw and standard scores of the subjects' mothers in the Parenting Stress Index (PSI) with regard to evaluation levels and the domains of the test

Various evaluation levels		pretest		posttest		Follow-up	
subjects	The domains of the test	Raw score	T score	Raw score	T score	Raw score	T score
The mother of the first subject	The domain of the child	119	48	85	36	88	37
	The domain of parents	113	46	111	45	81	35
	Life stress index	0	39	8	54	4	46
	Total stress index	232	46	204	41	173	36
The mother of the second subject	The domain of the child	161	64	131	53	98	41
	The domain of parents	182	70	135	54	98	41
	Life stress index	12	62	8	54	7	52
	Total stress index	355	68	274	54	203	41
The mother of the third subject	The domain of the child	154	61	141	56	131	53
	The domain of parents	134	53	129	52	135	54
	Life stress index	14	65	0	39	0	39
	Total stress index	302	59	270	53	268	53

Evaluating first subject's scores after the training sessions showed that educational interventions lead to the reduction of scores in the domain of child, the domain of parents and the overall index of stress (PSI) and this reduction in the domain of parents and the overall index of stress (PSI) is continued to follow-up level.

About the second subject, the effectiveness of parent education is revealed in the post-test which continues to follow-up level. The significant decrease in the follow-up period scores in the domain of child, the domain of parents and the overall index of stress (PSI) show that parents have been successful in learning and applying what they have learned because its effectiveness has continued even after the cessation of training. The results of the third subject after the training sessions showed that educational interventions have led to the reduction of scores in the child domain, the domain of parents and the overall index of stress (PSI) which is not significant due to the low level of difference.

Table 4: The raw and standard scores of the subjects' mothers in the Parenting Stress Index (PSI) with regard to evaluation levels and the subscales of each territory

Various evaluation levels			pretest		posttest		Follow-up	
subjects	domains	subscales	Raw score	T score	Raw score	T score	Raw score	T score
The mother of the first subject	The domain of the child	Attention deficit/hyper activity	28	49	14	35	20	41
		Reinforcement	15	56	9	41	8	39
		The child creation	9	43	10	47	10	47
		Receptivity	19	50	13	29	18	47
		Compatibility	25	48	19	39	17	37
		Avarice	23	46	20	43	15	36

	The domain of parents	The feeling of competency	25	46	34	58	21	40
		Parents' attachment	13	45	14	48	12	41
		The limitation of the role	11	39	13	42	9	37
		Depression	28	63	26	58	19	40
		The marital relationship	13	49	9	38	9	38
		Social isolation	14	49	8	38	7	36
		The health of parents	9	45	7	41	4	35
The mother of the second subject	The domain of the child	Attention deficit/hyper activity	32	53	28	49	18	39
		Reinforcement	14	54	10	44	7	36
		The child creation	18	75	10	47	9	43
		Receptivity	24	68	19	50	20	54
		Compatibility	38	68	32	59	29	54
		Avarice	35	62	32	58	15	36
	The domain of parents	The feeling of competency	42	69	34	58	27	48
		Parents' attachment	22	75	16	55	13	45
		The limitation of the role	29	63	22	54	13	42
		Depression	29	65	21	45	19	40
		The marital relationship	18	63	14	52	9	38
		Social isolation	24	67	14	49	11	43
		The health of parents	18	62	14	55	6	39
The mother of the third subject	The domain of the child	Attention deficit/hyper activity	43	63	42	62	37	58
		Reinforcement	15	56	18	63	17	61
		The child creation	12	54	11	50	9	43
		Receptivity	19	50	19	50	19	50
		Compatibility	30	56	24	47	21	42
		Avarice	35	62	27	52	30	55
	The domain of parents	The feeling of competency	27	48	21	40	22	41
		Parents' attachment	13	45	14	48	14	48
		The limitation of the role	27	61	24	57	23	55
		Depression	20	42	21	45	24	53
		The marital relationship	13	49	17	60	17	60
		Social isolation	18	56	19	58	18	56
		The health of parents	16	59	13	53	17	61

Evaluating first subject's scores in the domain of child showed that educational interventions have led to the reduction of scores in all subscales except for the creation of child. The profile of first subject's mother in the domain of child also shows that receptivity subscale in the follow-up level has increased again to the pretest and the decrease of reinforcement, compatibility and avarice subscales is continued in the follow-up level.

Second subject's scores evaluation indicates that educational interventions lead to the reduction of scores in all subscales and this reduction is in all subscales except for receptivity which continues to follow-up level. The scores of follow-up level show that the influence of parents' training is observed even one month after the content training of all meetings (follow-up).

As for the third subject, the effectiveness of parents' training can be explicitly observed in the subscales of the creation of child and compatibility.

Second subject's scores evaluation indicates that educational interventions lead to the reduction of scores in all subscales which continues to follow-up level. The scores of follow-up level show that parents have been successful in learning and applying what they have learned because its effectiveness has continued even after the cessation of training.

About the third subject, the effectiveness of parents' training in the posttest level in the subscales of the feeling of competency, the limitation of the role and the health of parents are explicitly visible. This is while the mother of this subject is again faced with a significant increase in the subscales of depression and the health of parents in the follow-up level.

Table 5. The raw and standard scores of the subjects' mothers in Beck Depression Inventory-II with regard to evaluation levels and the subscales

Various evaluation levels		Pretest		Posttest		Follow-up	
Subjects	subscales	Raw score	T score	Raw score	T score	Raw score	T score
The first subject	Emotional symptoms	1	48	1	48	1	48
	Cognitive symptoms	4	53	1	44	3	50
	Somatic symptoms	3	59	2	52	2	52
The second subject	Emotional symptoms	10	76	0	45	0	45
	Cognitive symptoms	11	75	0	41	2	47
	Somatic symptoms	4	67	0	36	0	36
The third subject	Emotional symptoms	1	48	0	45	1	48
	Cognitive symptoms	1	44	2	47	3	50
	Somatic symptoms	2	52	1	44	2	52

First subject's mother scores evaluation after 8 sessions show that educational interventions lead to the reduction of scores in the subscales of cognitive symptoms and somatic symptoms and the score of emotional symptoms subscale

has not changed. Moreover, a month after the training sessions, the subscales of emotional symptoms and somatic symptoms have remained unchanged compared to the posttest and the subscale of cognitive symptoms has increased again.

In the mother of the second subject, the effectiveness of parent training in post-test is observed in all subscales and this reduction in the domains of emotional symptoms and somatic symptoms continue to the follow-up level, but the score of cognitive symptoms subscale in the posttest has increased. The third subject's mother scores suggest that educational interventions have led to the reduction of scores in the domains of emotional symptoms and somatic symptoms in the posttest. Also, the cognitive symptoms subscale has increased in the post-test as well as the follow-up level which has been significant. As it is seen, emotional symptoms and somatic symptoms subscales have increased again in the follow-up level as pretest.

CONCLUSION

Overall, the results indicated the effectiveness of parental education on the reduction of the behavioral problems of children with ADHD disorder. Other studies have also reported the betterment of the performance and behavior of parents after 9 sessions of parents' training and after 2 months of follow-up[13].

In a research, Weinberg[14] evaluated the knowledge of the parents of children with Attention Deficit Hyperactivity Disorder about their child disorder before training sessions. The results show that after the meetings, their knowledge of this disorder has significantly increased. It can be concluded that parents' understanding of their child's disorder leads to change their attitude to know their behavior related to ADHD rather than intentional. This would increase the possibility of their cooperation and perseverance during the implementation of the codes of behavior that are learned during the sessions.

Based on the research findings, it is concluded that parent management training is effective in the promotion of Attention Deficit Hyperactivity Disorder and parental stress indices. The role of cooperation and participation of parents is significant in the implementation of the learned techniques and the motivation to follow training sessions.

Parental stress is also affected by children's behavioral problems because the results of the impact of parental education on improving the behavioral problems of subjects were positive in this study and this positive impact has been effective on reducing parental stress. In fact, it can be inferred that if the children's behavioral problems are reduced as a result of parental education, parental stress is also reduced and vice versa.

Interventions help to intense the treatment through parents. They add to the effectiveness of intervention as well as being cheap and therefore no large

financial burden is imposed on families[10, 15]. Also, it is shown that parent education programs increase parental competence[16]. Parent training enhances the quality of family life by reducing stress. Moreover, parents who participate in the treatment interventions report more optimism about their ability to influence their child's growth[17]. Therefore, the design and use of educational programs for parents are of utmost importance according to the benefits of involving parents in the treatment of children and since the family is the key component of any treatment based on the National Research Council (NRC) 2001, quoted in Rubly and Akshomov[18].

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