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The effect of emotion regulation training on family relationships of hyperactive children

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Abstract:

INTRODUCTION: One of the psychiatric disorders related to childhood is attention deficit hyperactivity disorder that can negatively affect the family interactions of these children. Parents of these children, especially the mother as the main caregiver, need comprehensive training to make a positive difference in their attitudes and behaviors with these children. The purpose of this study was to investigate the effect of emotion regulation training on family relationships in hyperactive children.

METHODS: This was a randomized clinical trial study with a control group performed on eighty mothers of hyperactive children who were selected randomly. The intervention group members attended emotion regulation skills training sessions for one session of 90 min each week for 8 weeks. During the training course in the intervention group, the control group did not receive any training. Data collection tools included demographic information questionnaires, Mother–Child Relationship Evaluation, and Rahim Organizational Conflict Inventory-II. Data analysis was performed by descriptive statistics and the analysis of covariance.

RESULTS: The mean scores of the mother–child relationship in the intervention group showed a significant improvement in the subscales of acceptance, overprotection, facilitation, and rejection ($P < 0.0001$). The results of this research also showed improvements in all the five communication styles of integrating, avoiding, compromising, obliging ($P < 0.0001$), and dominating ($P < 0.012$) between spouses.

CONCLUSION: It seems that the emotion regulation training approach in mothers with hyperactive children improved both the mother–child relationship and the interactive spousal styles and can be considered by the managers of treatment and rehabilitation field as an adjunctive therapy for the families of these children.

Keywords:

Attention deficit hyperactivity disorder, family relationship, mother–child relationship

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Introduction

The prevalence of psychiatric problems in children and teenagers in the world fluctuates between 7% and 26%.^[1] One of the most common psychiatric disorders in children and teenagers is attention deficit hyperactivity disorder (ADHD).^[2,3] People with this disorder are divided into the following three different subgroups: attention-deficit type, hyperactive impulsive type, and combination type.^[3] Associated

features often include perceptual-motor deficits, emotional instability, and development coordination disorder.^[4-6] Symptoms of ADHD affect children's interaction with their parents as well as parents' responding style to these children.^[7,8]

Symptoms impair the functioning of the child at school, at home, and in the community.^[9] In parent–child interaction, building and maintaining relationships between parents and children is so crucial.^[10,11] Because of this mutual impression between the parent

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and the child, it is difficult to blame any of them for the existing conflict. Therefore, the parents are chosen as the main driver of the changes in order to simplify the task and motivate them to change problematic interactions rather than complaining about their child's management skills.^[12]

Mothers are usually responsible for day care, especially when children are younger.^[13] Hence, it is essential for her to have cognitive emotion regulation skills to manage stressful situations that occur for her and her children.^[14] Emotion regulation refers to strategies that are used to reduce, enhance, or maintain emotional experiences.^[15] Aldao *et al.* have argued in theories of cognitive emotion regulation strategies that disturbance and agitation of emotions and their regulation will have pathological consequences because of their inherent importance in daily life.^[14] Any defect in emotion regulation can make a person vulnerable to mental disorders and is useful in creating and maintaining mental disorders.^[16] Emotion regulation training leads to success and happiness.^[17] Using emotion regulation strategies also increases the positive emotions, reduces the negative emotions, and thus increases the people's mental health.^[18] Another reason to learn emotion regulation is that emotion regulation can be considered as a way to understand the role of emotion in our lives and in our children's lives.^[19]

In a study, Gershy and Gray found that parental emotion regulation is crucial in reducing suppressive parenting behaviors.^[20] The results of Christina *et al.*'s study showed that each of the risk factors of nonregulated emotions and low frustration tolerance had a more significant impact on parent-child conflict risk, and parental emotion regulation had a significant negative relationship with the risk of parent-child violence and conflict.^[21] The results of the study of Shenaar-Golan *et al.* clarify the link between parental reassessment strategies and the suppression of emotion-related behaviors for different parenting experiences and emphasize on the importance of dealing with specific emotion regulation of parents in parental intervention programs.^[22] In summary, the evidence gathered from the study of Rutherford *et al.* suggests the importance of emotional regulation in parents. Emotional regulation focuses on the development of parents and their children.^[23] Mazursky-Horowitz *et al.* showed that mothers' emotion regulation disorders were positively correlated with mothers' violent and distressful reactions and were negatively correlated with positive reactions.^[24] The findings of Crandall study showed that mothers need to be helped to improve their emotional and cognitive control abilities to effectively reduce parental verbal violence and child behavior problems.^[25] The findings of the study of Tani *et al.* showed that emotion regulation disorder has a negative effect on spousal communication

quality, and emotion regulation is an essential factor in mutual communication quality and the intimacy between spouses.^[26]

Due to the high prevalence of ADHD and limited studies on the effects of emotion regulation skills on family relationships of hyperactive children, this study aimed to investigate the effect of emotion regulation training on family relationships of hyperactive children.

Methods

This study, based on the data collection method, lies in the field of experimental researches with pre- and post-test designs with separate experimental and control groups. This study was performed in the rehabilitation centers under the supervision of Nezam Mafi and Asma Welfare Organizations of Tehran in 1397. The sample size was determined using the following formula, as 40 people for each group who were randomly selected 45 people were considered for each group due to the possibility of sample drop).

$$n = \frac{2 \times (Z_{1-\alpha/2} + Z_{1-\beta})^2 \delta^2}{d^2} = \frac{16 \times \delta^2}{d^2}$$

$$\frac{16 \times 2.48 \times 2.48}{0.05 \times 0.05} \cong 40$$

The inclusion criteria included having at least one child with ADHD, no previous experience of attending emotion regulation therapy sessions for mothers, no co-participation in similar interventions, no use of psychiatric medications in mothers, living with a spouse about the mother who is being studied in the research, having no new stressor in mothers in the last 6 months, and no drug abuse by mothers. The exclusion criteria of the study included having a new disease, stress, or tension in the family during the training sessions and the mother's absence from the training sessions for more than 1 session.

The samples were selected by simple random sampling by lottery method. Initially, among all the rehabilitation centers under the supervision of the Welfare of Tehran, centers with child psychiatrists were listed, which were two centers of Asma and Nezam Mafi. Then, the center of Nezam Mafi was selected for the intervention group by random selection between the two centers of Asma and Nezam Mafi, and the Asma center was selected for the control group. Samples were selected by simple random sampling from people who met the inclusion criteria as follows: at the Nezam Mafi Center, out of 148 cases, 17 did not meet the criteria for entry. A total of 131 cases who satisfied the inclusion criteria were assigned a number, then a number was randomly

chosen among the other numbers, and 45 samples were selected for the intervention group. At the Asma Center, out of 132 cases, 12 did not meet the criteria for entry. A total of 120 cases that met the inclusion criteria were assigned a number, then a number was randomly chosen among the other numbers, and 45 samples were selected for the control group. The intervention group received eight sessions of 90 min for emotion regulation by the therapists, and the control group did not receive any training. Prior to the intervention sessions and 1 month after the last session, the participants completed demographic questionnaires, Mother–Child Relationship Evaluation, and Rahim Organizational Conflict Inventory-II (ROCI-II). The control group participants also completed the questionnaires in both stages (according to the experimental group’s schedule). Questionnaires were provided after selecting the research sample (based on inclusion criteria) and obtaining informed consent and providing sufficient explanations.

Participants’ demographic information questionnaire

In this section, questions about the demographic information including general characteristics such as the age of the father, mother, and child; gender of child; and occupation and education of parents were asked.

Mother–Child Relationship Assessment Scale

This scale assesses the mothers’ attitudes about their child in four styles and falls within the projective tests. These four subscales are child acceptance, overprotection, facilitation, and child rejection. The test consists of 48 items and is based on a 5-point Likert scale. Each subscale has 12 items, and 48 items are scored in total. The scores of each subscale are between 12 and 60. Acceptance is the positive element, and overprotection, facilitation, and rejection are the negative elements, and thus the score increase in acceptance scale and score decrease in the three other subscales indicate an improvement. In 1980, Robert M. Ross reported the validity of this scale as 0.41–0.57 and its reliability as 0.28–0.68.^[27]

Rahim Organizational Conflict Inventory-II

This questionnaire was designed by Rahim . The questionnaire consists of 28 items and five subscale styles of integrating style (7 items), dominating style (5 items), obliging style (6 items), avoiding style (6 items), and compromising style (4 items). The items on this questionnaire are scored on a 5-point Likert scale (from strongly disagree = 1 to strongly agree = 5). Each of the items can be scored from 1 to 5, and then, based on the number of items in each subscale, the overall score of that subscale is gained. The minimum and maximum scores of each subscale will also vary from 1 to 5 regarding its number of items. Accordingly, the subscale of integrating

with 7 items will get a minimum score of 7 and a maximum score of 35. If the score of a subscale is higher, it reveals that the participant uses that style to resolve his/her conflict. Rahim and Magner (1995) obtained the (split half) validity of the instrument between 0.67 and 0.73 and the reliability of its subscales ranging from 0.78 to 0.72.^[28] Statistical analyses were done with SPSS 24software) SPSS Inc, Chicago, IL, USA (on a Microsoft Windows based computer. Data were analyzed using descriptive and analytical statistics such as one-way ANOVA, independent *t*-test, paired *t*-test, Chi-square test, and Mann–Whitney test.

Ethical considerations included explaining to the participants about the research and its goals, obtaining informed consent from the research participants, and ensuring confidentiality of participants’ information. Training to the control group after the project was completed in four sessions.

Results

The demographic findings are presented in Table 1. Both the intervention and the control groups were homogeneous. Table 2 presents the mean and standard deviation of the four elements of mother–child relationship separately in the two research groups and two pre- and post-test stages. Thus, it can be stated that emotion regulation training is effective on mothers’ relationship with overactive children. Table 3 presents the mean and standard deviation of the five elements of ROCI-II style separately in two research groups and two pre- and post-test stages. It can be said that our hypothesis regarding the effect of emotion regulation training on the relationship of spouses with overactive children is confirmed. Table 4 examines the correlation between conflict resolution styles and mother–child relationship factors.

Discussion

The purpose of this study was to investigate the effectiveness of emotion regulation training on the family relationship of overactive children (mother–child relationship and spouse relationship) in eighty mothers of overactive children. The results of this study showed that there was no significant relationship between the demographic variables (age, gender, ethnicity, education, residential status, number of children, number of children with ADHD, the birth order of the overactive child, presence of elderlies or patients at home, and physical illnesses of the parents) and the mean scores of mother–child relationship in four subscales of child acceptance, overprotection, facilitation, and child rejection in both intervention and control groups. There was no difference in pretest stage ($P > 0.05$). However, in

Table 1: Study of demographic factors separately in the research groups

Demographic factors	Control	Intervention	Test result (P)
Children's age group (years)			
5-7	10 (25)	13 (32.5)	0.459
8-12	30 (75)	27 (67.5)	
Mothers' age (years)			
<30	10 (25)	6 (15)	0.458
30-40	24 (60)	29 (72.5)	
>40	6 (15)	5 (12.5)	
Fathers' age (years)			
<30	1 (2.5)	0	0.567
40-30	22 (55)	21 (52.5)	
>40	17 (42.5)	19 (47.5)	
Children's gender			
Female	29 (72.5)	34 (85)	0.172
Male	11 (27.5)	6 (15)	
Residential status			
Personal	13 (32.5)	14 (35)	0.165
Leased	13 (32.5)	16 (40)	
Organizational	7 (17.5)	1 (2.5)	
Relatives' home	7 (17.5)	9 (22.5)	
Number of children			
1	7 (17.5)	10 (25)	0.875
2	24 (60)	22 (55)	
3	7 (17.5)	6 (15)	
4 children and more	2 (5)	2 (5)	
Number of affected children			
1	31 (77.5)	30 (75)	0.538
2	8 (20)	10 (25)	
3	1 (2.5)	0	
Birth rank			
First child	27 (67.5)	27 (67.5)	0.884
Second child	10 (25)	11 (27.5)	
Third child	3 (7.5)	2 (5)	
Elderly or sick			
No	35 (87.5)	35 (87.5)	0.999
Yes	5 (12.5)	5 (12.5)	
Fathers' literacy level			
High school	17 (42.5)	18 (45)	0.891
Diploma	15 (37.5)	13 (32.5)	
Academic	8 (20)	9 (22.5)	
Mothers' literacy level			
High school	15 (37.5)	14 (35)	0.954
Diploma	17 (42.5)	17 (42.5)	
Academic	8 (20)	9 (22.5)	
Employment status of mother			
Homemaker	38 (95)	35 (87.5)	0.235
Employed	2 (5)	5 (12.5)	
Fathers' occupation status			
Freelance job	28 (70)	29 (72.5)	0.805
Employee	12 (30)	11 (27.5)	
Monthly income			
<1 million USD	9 (22.5)	10 (25)	0.675
Between 1 and 3 million USD	24 (60)	26 (65)	
Between 3 and 5 million USD	6 (15)	4 (10)	
>5 million USD	1 (2.5)	0	

Contd...

Table 1: Contd...

Demographic factors	Control	Intervention	Test result (P)
Maternal physical illness			
No	38 (95)	34 (85)	0.136
Yes	2 (5)	6 (15)	
Paternal physical illness			
No	40 (100)	37 (82.5)	0.077
Yes	0	3 (7.5)	

the posttest stage, in the intervention group, the results showed a statistically significant relationship between the improvement of child acceptance and the factor of child's age ($P = 0.04$) in a way that improvement rate after intervention in children of 8–12 years was higher than the children of 5–7 years. Researchers believe that this may be due to the fact that 5–7-year-olds who participated in the study were experiencing the 1st year of entering preschool or first grade; despite all the problems she had with her child's ADHD, the mother is now experiencing a new stress of starting her child's training course, and this will be a crisis for both mother and the child. Children aged 8–12 years have gone through these stages and, on the other hand, Kaplan believes that about 60% of children will get better in terms of the symptoms of hyperactivity by adolescence,^[3] which together can increase the mother's acceptance rate in the age range of 8–12 years. In addition, there was a statistically significant relationship between the rate of improvement of child acceptance and maternal age factor ($P = 0.266$) in a way that the lesser was the mother's age, the more was the improvement. The results of the study developed by Jeanne *et al.* in the USA^[29] also showed that the rate of acceptance in mothers over 40 years old was significantly lower compared to younger mothers, which is consistent with the results of the present study.

The researchers believe that this may be due to the fact that mothers with lower ages usually have fewer children and more time to apply their learned training and training can have a more significant impact on this group of mothers.

Based on the achieved findings, it was found that emotional regulation training increased the scores on the subscales of child acceptance, overprotection, facilitation, and rejection, indicating an improvement in the mother-child relationship. This increase in the scores in the subscales of child acceptance, overprotection, facilitation, and rejection was significant compared to that of the control group. Based on the results, it can be said that emotion regulation training has a positive effect on mothers' relationship with overactive children. These results are directly and indirectly consistent with those of Barkley,^[30] Karenc,^[31] Schilling and Walsh,^[32] Johnston *et al.*,^[33] Karzadeh and Abdi,^[34] and Klahr *et al.*^[35]

Table 2: Study of the effect of the intervention on mother-child relationship in the research sample groups

Maternal-child relationship assessment styles	Before intervention	After the intervention	Test result (P)
Acceptance			
Control	33.2±4	32.15±4.12	0.002*
Intervention	35.63±5.54	48.78±6.27	<0.0001*
Overprotection			
Control	44.48±7.02	45.5±6	0.141
Intervention	42.2±8.6	23.25±3.4	<0.0001*
Facilitation			
Control	37.9±5.79	39.25±5.1	<0.0001*
Intervention	38.8±5.93	26.08±4.09	<0.0001*
Rejection			
Control	37.48±4.8	37.68±4.83	0.266
Intervention	37.4±5.67	25.35±3.64	<0.0001*

Table 3: Study of the effect of the intervention on conflict resolution styles (Rahim Organizational Conflict Inventory-II) in the research sample groups

Conflict resolution styles	Before intervention	After the intervention	Test result
Integrating			
Control	28.53±4.36	28.65±4.18	0.289
Intervention	27.2±5.46	34.33±13.31	<0.0001*
Avoiding			
Control	19.85±9.26	21.8±17.06	0.226
Intervention	18.08±5.85	20.58±4.93	<0.0001*
Compromising			
Control	13.8±4.76	14±4.78	0.207
Intervention	17.7±12.45	17.5±4.37	0.012*
Obliging			
Control	14.73±2.04	15.25±1.97	0.002*
Intervention	14.25±2.48	17.53±1.78	<0.0001*
Dominating			
Control	19.58±5.3	18.15±5.1	<0.0001*
Intervention	10.03±5.66	21.45±4.58	<0.0001*

The results of the study also showed that emotion regulation training improved all the five communication styles of integrating, avoiding, dominating, compromising, and obliging between spouses. One of the critical factors affecting emotion regulation is the spousal relationships and spouse characteristics. The dysfunctional emotional regulation and marital disturbance at the individual and spousal levels have interactive relations with each other. Emotion regulation plays a mediating role in self-disclosure, empathic response, and the subsequent affectionate and loving behaviors. Emotional self-disclosure promotes greater emotional intimacy. Empathetic and warm responses from a responsive spouse increase the overall satisfaction with the relationship and reinforce the subsequent supportive and emotional behaviors.^[36,37] The presence of disturbance in marital relationship in comparison to dissatisfaction with other emotional relationships shows a higher overlap with emotional and behavioral disorders.^[36] The results of the present study are consistent with those of Snyder *et al.* and Laurenceau

et al.^[36,37] Concerning the mechanism of the effect of emotion regulation training on family relationships of overactive children, it can be said that the presence of a child with ADHD in each family is undoubtedly a challenging and undesirable event that causes stress, frustration, and disappointment in each of the spouses and a lot of marital problems. The overactivity disorder is one of the most common psychiatric disorders in children and teenagers. Nearly 30%–70% of children with ADHD show the symptoms of this disorder until their adolescence.^[38] The severe effects of this disorder on the society have been stated as the stress cost in family, disturbance at school, the potential for crime and drug abuse, and the persistence of psychiatric disorders until the adolescence. Parents of these children, as the center and the most critical link in child care, education, and supervision, should coordinate assessments, examinations, and treatments, and in the meantime, keep in contact with different experts and centers. They are faced with important decisions regarding the child, the handling of the new conditions, and financial issues that can affect the functioning of the whole family.^[39] The stated instances in different situations, cause couples with overactive children to face a lot of stresses.^[40] As the parents and the children interact in a mutual process and in such a team the two parties can have significant effects on each other,^[41] and as long as the couples' psychiatric problems can intensify the symptoms of their children's hyperactivity,^[42] it is necessary to pay attention to all the aspects of family relationship in children with ADHD to reduce the behavioral problems of these children. Emotion-focused therapy is considered a powerful intervention to improve spousal relationships due to focusing on emotional experience and connection.^[43] It seems that if the couples with children with ADHD learn about the negative emotions, destructive interaction patterns, the correct way of dealing with life's challenges, and the insights needed to make a lasting change, they will not only be able to deal with their interpersonal problems more effectively, but can also improve their interactions with their overactive child. The trained

Table 4: Study of the relationship between the changes in the scores of the mother-child relationship factors and the changes in conflict resolution styles in the intervention group after intervention

Conflict resolution styles	Mother/child relationship			
	Acceptance	Overprotection	Facilitation	Rejection
Integrating (<i>R, P</i>)	0.305, 0.056	0.357, 0.024*	0.177, 0.276	0.103, 0.525
Avoiding (<i>R, P</i>)	0.323, 0.042	0.3, 0.06	-0.011, 0.948	0.295, 0.065
Compromising (<i>R, P</i>)	-0.076, 0.643	-0.278, 0.083	-0.028, 0.862	-0.176, 0.279
Obliging (<i>R, P</i>)	0.277, 0.084	0.47, 0.002*	0.305, 0.056	0.179, 0.269
Dominating (<i>R, P</i>)	0.17, 0.294	0.122, 0.452	-0.303, 0.057	-0.139, 0.392

parents can interact more effectively with their children and nurture independent and thoughtful children in these interactions. The awareness of parents about the right ways of dealing with children reduces inappropriate behaviors between them, increases children's confidence in parents, and causes both parents and their children to behave more rationally about their requests and expectations from each other. Trained parents give a more active role to the children in coping with the problems and the difficulties, prevent the children from being prejudiced and avoid dictating them, and their children will take after their parents in these traits. Children of such parents have a secure attachment and have appropriate interactions.^[44] Training the proper behavioral management methods, while enhancing the positive parent-child interactions, reduces mothers' psychiatric disorders such as depression, anxiety, and stress.^[45]

In this study, the questionnaires were completed by mothers only, and if there was a possibility to complete the questionnaires by both the spouses and their children, then the findings were not confined to self-reporting. Moreover, in this study, confining the statistical population of the research to the mothers and primary schoolchildren might limit the generalizability of the findings, interpretations, and etiological documents of the variables under study, while the role of the father as an influencing variable on the mother-child relationship was not examined as well. Based on the findings of the present study and considering some of the facts revealed during the research and regarding the limitations that the researchers faced, it is suggested that future researches will examine the comparative effect of emotion regulation training skills and other psychiatric interventions on mothers' relationship with overactive children, the effect of emotion regulation training on parents' relationship with overactive children, the effect of emotion regulation training on overactive children's teachers and its relation with educational success rate in overactive students, and the mother-child relationship in educational progress of students at different grades and levels. This study can motivate education managers to pay special attention to parent education in educational planning of these children. Practical suggestions include educating mothers with ADHD children.

Conclusion

It seems that the emotion regulation training approach in mothers with hyperactive children improved both the mother-child relationship and the interactive spousal styles and can be considered by the managers of treatment and rehabilitation field as an adjunctive therapy for the families of these children.

Acknowledgments

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Conflicts of interest

There are no conflicts of interest.

Table 4 examines the correlation between conflict resolution styles and mother-child relationship factors. According to the results of Spearman's correlation coefficient, there is a significant correlation between the integrating style and over-protection (P value = 0.024) in a way that by an improvement in the overprotection, the integrating style has improved, too. There was also a significant correlation between the avoiding style and the child acceptance (P value = 0.042) that by an improvement in the child acceptance, the avoiding style has improved as well. According to the results of Spearman's correlation coefficient, there was a significant correlation between the over-protection and the compromising style (P value = 0.002), in a way that by an improvement in the overprotection, the compromising style improved, too. There was no significant relationship between the integrating style with child acceptance, facilitation, and child rejection. There was no significant relationship between the avoiding style with over-protection, facilitation and

child rejection. There was no statistically significant relationship between improvement of the obliging style and improvement of any of the factors of mother-child relationship. There was no significant relationship between compromising style with child acceptance, facilitation, and child rejection. There was no statistically significant relationship between improvement of the obliging style and improvement of any of the factors of mother-child relationship.

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