Research Paper: Determining the Effectiveness of a Modulated Parenting Skills Program on Reducing Autistic Symptoms in Children and Improvement of Parental Adjustment

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ABSTRACT

Objectives: This study aimed to develop a modulated program of parenting skills and to evaluate its effectiveness in reducing autistic symptoms and increasing parental adjustment.

Methods: This quasi-experimental study utilized in two phases, a pretest- posttest design and a control group. First, a treatment program with both individual and group structure was constructed considering available treatments such as cognitive–behavior therapy, social stories, and play therapy catered to autistic children and the needs of their families. The program consisted of techniques such as acceptance, common cognitive errors challenge, control of thoughts, emotions and behavior, the principles of reward and punishment, and crisis management etc. The validity of the program was confirmed by four experts. Secondly, 26 volunteer qualified couples selected from the parents were referred to a rehabilitation center in Tehran, and were randomly assigned into experimental and control groups. The pretest was performed for all participants. Then, the control group was kept away from the program during the 10 sessions of group, four sessions of individual, and two sessions of family therapy for each couple in the experiment group.

Results: Univariate analysis of Covariance showed that the program significantly improved marital adjustment in parents (F=22.018, P=0.001), and successfully reduced the symptoms of autistic disorder in social interaction (F=5.733, P=0.027) and relations (F=10.07, P=0.005). However, it did not significantly affect stereotyped behaviors (F=4.304, P=0.053) and development (F=0.448, P=0.511) of autistic children in the experimental group.

Discussion: The compiled parenting program is recommended to improve parental empowerment for the families of autistic children, because it is capable of reducing autistic symptoms in social interaction and relationships as well as improving marital adjustment in such families.

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1. Introduction

Generally, when a child is diagnosed with autism spectrum disorder, many tensions may have stepped into the realm of the family [1, 2]. The family with a child who is clearly different from other children experiences a wave of fear and confusion and seeks psychiatric or counseling care to find the reason behind their child's difference. Literature suggests that the greatest amount of stress and grief is experienced when a family hears the word 'autism' for the first time [3-5]. Lack of information [6], coping and management of child behavior problems, troublesome and time consuming treatments strategies, financial challenges, and having access to certain treatment centers [7] are some of the major stressors in the family. Terrifying stresses compromise the mental and physical health of family members, especially parents [8] and bring them to the borders of depression [9]. The rate of divorce in such families shows the chaotic environment due to low parental adjustment and autistic symptoms and disorders. Naseef and Freedman reported 80 percent divorce rate in families with autistic children in the USA [7], while Hartley et al. showed 23.5% divorce rate in a smaller group of such families [10]. This is a significantly higher rate of divorce compared to the families with normal children (13.8%). The same situation holds in Iranian families. Khooshabi reported that mothers who take care of their autistic child have significantly lower mental health compared to others [11]. There is a high essentiality for supportive role and close relationship of the couples and their adjustment in improving the conditions of children and families in all communities [12].

Although there are many evidences regarding the problems of an autistic child's parents, most documents have reported children as the target population in treatment programs [6]. Whereas, previous studies suggest that special plans for parents tended to improve their mental health, marital adjustment, and effective coping with providing the scientific and reasonable care of the child [6, 13, 14]. Parents and families of autistic children are their only major teachers. Therefore, they should certainly be educated and supported [15-17]. Educational programs can reduce negative feelings and effects. Meanwhile, increasing self-efficacy in parents, which leads to their marital adjustment and satisfaction [18], higher capability in enforcement of Communication skills in an autistic child, and better management of difficult behavior challenges [14, 19]. Hence, nowadays 'Autism' therapy considers training parents as well [20, 21].

Most Iranian research literature regarding autism has focused on autistic children as the target [22]. There are a few studies, which specifically point out the significance of training the parents, or address their problems in Iran [23-25]. Therefore, this study aims to develop and evaluate the effectiveness of a modulated program of parenting skills in reducing autistic symptoms, and to increase parents' adjustment.

2. Methods

Participants

Among the families referred to the rehabilitation centers in Tehran city, 26 couples who have a 3-6 year old autistic child diagnosed by a psychiatrist, and were living together during 2012-2013 volunteered to participate in this study.

Instruments

Gilliam Autism Rating Scale (GARS)

Gilliam Autism Rating Scale (GARS) is a behavioral check list to evaluate the severe behavioral disorder in 3-22 year old individuals. It has 56 items in four subscales: Stereotyped Behaviors, Social Interaction, Communication and Developmental Disturbance, which rates each behavior in four levels. The internal consistency of the subscales is reported as 0.90, 0.93, 0.89, 0.88, respectively, and the total score was considered reliable using Chronbach's Alpha (0.96). The construct reliability of the questionnaire was correlated with the Autism Behavior Checklist (ABC), 0.94 in totals, and 0.37-0.92 for their subscales [26].

Depression Anxiety Stress Scale (DASS)

Lovibond and Lovibond developed the Depression Anxiety Stress Scale (DASS) with 42 items to evaluate the symptoms of depression, anxiety, and stress in adults [27]. The reliability of the depression, anxiety, and stress subscales was reported 0.91, 0.84, and 0.90, respectively. This is a diagnostic and concurrently valid questionnaire. Each subscale can be scored between 0-42.

Procedure

The present study had two phases; descriptive design at first to develop the plan followed by a semi-experimental pre-posttest research design with a control group for evaluation. In the initial phase, a large-scale field study was conducted over the existing therapeutic methods for children with autism. Then, 12 parents of autistic children were interviewed about their educational needs and prob-

lems in their own opinion. The techniques with approved efficacy in the research literature were incorporated based on the positive parenting structure and considering the counseling approach. Most of the techniques were selected from cognitive-behavioral therapy since the study population was the parents. Because they can understand their children and then take an active part in the treatment process through increasing their acceptance and capabilities. Both of the parents were encouraged to participate in the treatment process in this study, while previous studies suggested that usually one of the parents –especially the father- would be excluded. The researchers believed that this dual participation could enhance their marital adjustment and close relationship besides increasing their responsibility toward the treatment.

The final plan was developed from the initial incorporated plan after being evaluated, modified, and confirmed by four professionals in the field of autistic children through Delphi method. Table 1 shows the abstract of the parenting sessions in this study.

In this program, the sessions 4, 6, 8, and 13 were held separately for each couple with cognitive behavior approach, and sessions 14 and 15 were held for each family concentrating on the whole family with CBT approach. The family members were free to take part in these two sessions. Each absent parent would receive a brochure of the session to keep him or her in the process. All the sessions were conducted by a professional counselor or psychologist.

The second phase began right after developing the plan. As mentioned, the researchers designed a pre-posttest controlled trial for the clients who were referred to the rehabilitation centers in Tehran and who agreed and registered to participate. Twenty-six parents were selected among those registered, and were randomly assigned in two groups, control and experiment. All participants completed the questionnaires twice, once before starting the sessions, and once right after the end of the final session. The control group received no intervention regarding parent education at the time and had only the routine rehabilitative treatments.

Data analysis

Gilliam Autism Rating Scale has total score and four subscales. Differences of the subscale means between two groups were analyzed using Multivariate analysis of covariance (MANCOVA). Analysis of covariance (ANCOVA) was used to analyze each subscale in pre-posttest, if the difference of total score was significant. Mean of GARS total score in posttest had been regarded as dependent variable and the covariate would be mean of total score in pretest, which would be examined by analysis of variance. Differences between mean of total score in DASS were analyzed by analysis of covariance considering mean of total score in pretest as the dependent variable, whereas mean of total score in posttest would be the covariate.

3. Results

Table 2 shows demographic information of the research sample. Independent t student results showed no significant difference between the two groups ($P>0.05$, $t_{(24)}=0.863$). There was no significant difference in education ($P>0.05$, $X^2=1.114$, $df=3$) and economic level ($P>0.05$, $X^2=0.644$, $df=2$) between the two groups.

The variance-covariance matrices consistency ($P<0.05$), homogeneity of variances ($P<0.05$), and homogeneity of regression coefficients ($P<0.05$) were studied to test the first hypothesis and three basic assumptions of multivariate analysis of covariance. Results showed that these assumptions were set at 95 percent. The results of multivariate analysis of covariance showed that all four multivariate measures -Wilks' Lambda, Pillai's trace, Hotelling trace, and Roy's largest root- are significant at the 99% confidence level ($F_{(4,17)}=5.690$, $P=0.004$).

Thus, the null hypothesis is rejected and the linear combination of the four dependent variables shows that posttest components means -stereotyped behavior, communication, social interaction and development- were affected significantly by independent variable (Positive Parent Training Program), whereas the differences of four pretest means of the covariates have been eliminated. On the other hand, results suggested that the independent variable made reliable and significant changes on the means of four dependent variables in a linear combination. We used Analysis of Covariance to evaluate the effect of the independent variable on each dependent variable separately (Table 3).

According to Table 3, the experiment and control group did not significantly differ in terms of Stereotyped Behaviors ($F_{(1,20)}=4.30$, $P=0.053$) and Development ($F_{(1,20)}=0.448$, $P=0.511$) at 99% confidence level after eliminating the pretest effect. This indicated that the positive parent-training program did not statistically differ in its efficacy in reducing stereotyped behaviors and improving development of autistic children. On the contrary, the result of ANCOVA which eliminates the pretest effect, determines that this program could significantly change the means of communication ($F_{(1,20)}=10.07$,

Table 1. Parenting skills plan

Session	Objectives	Contents
1: Introduction	Introducing to each other and the group leader Become familiar with the whole structure of the parenting skills group Knowing the rules of the group Consistent and active presence in the group Able to define Autism disorder and its symptoms	Introducing the parents to each other and to the facilitator, distribution of the questionnaires, total review of the parenting skills, declaring the rules, defining Autism disorder, the parents' importance in treatment and assignments
2: Self management	They can identify their thoughts and behavior towards their child. Able to accept their child's illness. Able to manage their feelings, thoughts and behaviors	Group conversation, experience negative emotions Leader, self-management strategies, observer's mind, being in the present moment, unconditional acceptance of self, others and life Group conservation, unconditional self/others acceptance, questioning the basis of common cognitive errors
3: Autism parenting	Able to describe the pattern of parenting autistic children Able to write the change goals in themselves and their child Able to monitor and record a child's problematic behavior properly	Introducing common treatments and techniques in autism disorder Change targets Practice: monitoring the problematic behavior
5: Three strategies of parenting	Able to establish strategies to keep positive relationship with their children Able to provide encouragements for their child's desirable behavior Able to create new skills or behaviors in their children Choose two parenting strategies for practice and do it for 7 days under monitoring Prepare a chart of behavior and mark the behavioral changes during a 7 day period	Group discussion on parenting skills Exercise 1: talk and listen effectively Exercise 2: how to show interest Strategies to encourage desirable behavior in children Creation of new skills or behaviors in children
7: Games	Able to use games to enhance their children's attention and concentration Able to use games necessary to enhance the visual memory of their children Able to use games necessary to enhance the auditory memory of their children	Therapist gives a speech about play for children Educational Approach of play for autistic children Where should play the game? Whose turn is it? Group conversation: game of concentration and memory, auditory memory and Visual memory
9: Damaging behaviors	Able to make rules for the whole family on how to communicate with autistic children; all family members talk together about those rules Parents create an environment at home where the members can have direct and objective conversations and use the planned neglect of the behavioral disorders. Remain calm and give clear, certain and accurate instructions to their children Use time-outs in the correct way	Introduction of laws, direct conversations and planned neglect Exercise 1: direct conversation about the deficits of rules Exercise 2: ideas about how to give the calm and precise commands Exercise 3: ideas for planned neglecting Exercise 4: Select the logical consequence To introduce two final strategies to manage maladaptive behaviors Answer to common questions about the management of maladaptive behavior
10: Packs	Able to use visual cards for education of their children Able to make creative visual cards according to their children's status	Therapist describe the packs therapy and introduce some cards in the session Workshop of making some visual cards according to the child's status
11: Social stories	Able to tell stories in right way Able to use story telling techniques and social stories in modifying the behavior and learning new behaviors	Therapist speech about social stories and impact of tales on children Group discussion, social stories' content, who is a good storyteller? Story teller's face and moves, practice to tell a story
16: Combination	Able to use parenting skills for autistic children at home and in the society Able to receive support from all family members and social network Able to solve future problems and feel self-efficient	Remembering basic points of individual counseling sessions Progress review: determine actual changes Keeping changes Distribute and complete the questionnaires

Table 2. Demographic information of participants

Variable	Experiment		Control		Significance Test
	F	M(SD)	F	M(SD)	
Parents age	---	37.61(3.68)	---	38.92(4.03)	t(24)=-0.863 Sig.=0.397
Parents education					
Less than 12 years	2		3		
Diploma	9		11		df=3 χ^2=1.114 Asymp Sig.=0.774
BSc.	11		10		
Post graduate level	4		2		
Economic level					
Low	4		5		
Intermediate	7		5		df=2 χ^2=0.644 Asymp Sig.=0.725
High	2		3		

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P=0.005 on 99% confidence level) and social interaction ($F_{(1,20)}$=5.723, P=0.027 on 95% confidence level).

Since this study intended to evaluate the total effect of the training program on reducing autistic symptoms, thus the total score of GARS was used in analysis of covariance when the basic premises of ANCOVA (normal distribution, heterogeneity of variances, and homogeneity of gradients) were confirmed in the 99% confidence level. The result of this test indicates that the intervention in this study could significantly influence on the difference between the autistic symptoms in two groups. We can assume that considering η^2=0.030, which shows the strength of the relationship of the experiment factor with the dependent variable, 31 percent of changes in the dependent variable were derived from the study intervention (Table 4).

Analysis of covariance results suggested that the mean of total adjustment score differs between the two groups due to the study intervention (independent variable). It is concluded that considering the high eta square in this analysis (0.49), almost 49 percent of changes in the dependent variable (adjustment) are related to the intervention (positive parenting education) (Table 5).

4. Discussion

The main goal of this study was to develop a modulated program of parenting skills and to evaluate the effective-

Table 3. The results of ANCOVA on symptoms of Autism disorder

Symptoms of Autism Disorder	Effects	Sum of Squares	df	Mean of Squares	F Ratio	Significance Level
Stereotyped behaviors	Pre test	0.933	1	0.933	3.975	0.060
	Group	1.011	1	1.011	4.304	0.053
	Error	4.696	20	0.235		
Communication	Pre test	0.798	1	0.798	3.868	0.063
	Group	2.077	1	2.077	10.07	0.005**
	Error	4.127	20	0.206		
Social interaction	Pre test	0.229	1	0.229	0.838	0.371
	Group	1.567	1	1.567	5.733	0.027*
	Error	5.468	20	0.273		
Development	Pre test	0.066	1	0.066	0.977	0.335
	Group	0.030	1	0.030	0.448	0.511
	Error	1.347	20	0.067		

* P<0.05; ** P<0.01

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Table 4. Analysis of Covariance of symptoms of Autism

Source	Sum of Squares	df	Mean of Squares	F	Sig.	Partial η^2
Fixed	0.18	1	0.18	1.09	0.308	0.045
Pretest	6.21	1	6.21	37.16	0.000	0.618
Group	1.67	1	1.67	9.99	**0.004	0.303
Error	3.84	23	0.17			

** P<0.01

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ness of this program in reducing autistic symptoms and increasing parental adjustment. Results indicated that the study intervention increased social interactions and facilitated relationships but had no significant effect on stereotyped behaviors and development. These findings are consistent to those of Sanders et al. [28], Sanders [29], Webster-Stratton et al. [30], Hoath and Sanders [31], Diament and Colletti [32], Connell et al. [33], Khorramabadi et al. [25], Talei [34], and Kheyrieh et al. [35] in the sense that educating the parents who have children with behavioral disorders could have significantly decreased their child's behavioral problems. Whereas, Sanders [36] reported that parenting skills training could not reduce children's behavioral problems in their study.

Markus et al. (1997) believed that increasing parents' awareness is one of the most important reasons of reducing children's behavioral problems. If parents lack the knowledge of how to deal with their autistic child's bizarre or aggressive behavior, they will be confused and/or angry and have dysfunctional reactions that may cause more behavior disorders [37]. For example, if parents understand that their child's sensitivity toward change is not his/her problem only, and accept it, they can play an effective role in reducing such disorders and incompatibilities. Dale et al. [38] explained that if parents acquired enough skills in confronting children's problematic behaviors, they would react more efficiently, which might lead to better results. Landa (2007) noted that there is a higher chance of predicting the future status in clients and reducing the children's maladaptive and problematic behaviors through educating communication skills. In fact, they think that early adequate interventions are the key to improving communication skills and reduction of abnormal manners [38].

Quil (2000) indicated that packs imaginary cards have significantly increased communication skills in autistic children [37]. This finding supports the present study result as the researchers explained the effectiveness of these cards to the parents and provided some samples for them in order to teach them how to create the cards suitable for their own children. It seems that one of the important reasons of the ineffectiveness of the parenting skills program on stereotyped behavior in children was the counseling approach, which was the basis of this training program, whereas there was an essential need for occupational therapists' professional cooperation in this regard. Perhaps this can be a matter of consideration in future studies.

The present study demonstrated that the positive parenting program is definitely useful in enhancing parental adjustment. This is consistent to the results of Sanders et al. [28], Connell et al. [33], and Zubrick et al. [39]. The main finding of this study confirms on fathers' attending in the sessions on their therapeutic role. Although some fathers could not attend in the sessions because of their work, as long as they studied the brochures, it was implied that they had the tendency to support their family and participate in the group. However, common experiences with other parents and the idea of not being the only one with this problem are the group effects, which can heal their stress and sorrow [6]. Individual therapeutic sessions helped couples to understand, accept, and support each other.

Table 5. Analysis of covariance for parental adjustment

Source	Sum of Squares	Degree of Freedom	Mean of Squares	F	Sig.	Partial η^2
Fixed	0.780	1	0.780	5.041	0.035	0.180
Pretest	0.175	1	0.175	1.131	0.299	0.047
Group	3.405	1	3.405	22.018	0.001**	0.489
Error	3.557	23	0.155			

** P<0.01

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There are some labels for the parents with autistic children such as icehouse mothers, which means they failed to bring up their children. These labels make the family feel ashamed and socially isolated along with the fear and anxiety they experience regarding the judgments of the nonprofessional others; labels they believe in sometimes. It is obvious that the more the parents are aware of their children's signs and symptoms, the more capable they will be in dealing with the judgments and sarcasm, which lead to a better feeling toward their child's treatment. Nevertheless these stigmas will be added to the other stressors of the parents to make everything more difficult for them [40].

Masturn (2001) noted that most of the families with autistic children confronted with continuous and frequent stress and anxieties in their daily living [40]. Turnbull and Turnbull (1990) believed that autism affects the family as a whole. The decline in social replication and/or capability of coordination with others in such families may lead to depression and distress [37]. Kraus & Meazaros [41] explained that multiple disabilities cause limitations not only for the affected person but also for the entire family. When a family with an autistic child comes to public, it is possible for them to be ashamed of their child's bizarre behavior. Some insipient people may blame the parents of such children. These reactions can cause separation defense mechanism in the family [37]. Sometimes the family could be nervous and angry even in understanding their child's correct diagnosis [42]. The parents' anxiety, stress, and depression exacerbated more and more since the diagnostic process is time consuming and there is no certain and distinguished treatment for this disorder [43].

Grief is a natural reaction of the parents who have lost a lot of plans and desires they had for their child all at once and been disappointed aftermath [44, 45]. Rutter (1997) said that the chronicity of autism make parents try continuously whereas they feel guilty and angry to see their child's developmental delay [37]. The families with an autistic child feel frustrated and incompetent because of having an abnormal child. They have a sense of failure since it is not possible to live their life in the way they want. This grief is the basis of anxiety. Parents' depression and sorrow get worse in some occasions like birthdays, graduation and marriage of their normal children [2].

Weiss showed that if the parent education program can increase their flexibility, then it would possibly improve their adjustment. Mierau suggested that positive interactions in the educational program might help with better adjustment for the parents. The family will learn how to eliminate the stressors and somehow reduce their stress and anxiety [37]. Meanwhile, participating in a group helps parents feel free of the loneliness and depression, and be calm because of the group empathy.

5. Conclusion

The modulated program of parenting skills presented in this study could empower parents and families of autistic children. It was effective on reducing the autistic symptoms with respect to social interaction and relationships as well as improving marital adjustment in such families. Thus the application of this compiled parenting program is recommended in caring for autistic children.

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Conflict of Interest

The authors declared no conflicts of interest.

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