

Efficacy of Behavioural Parent Training Program in Reducing Parental Stress among Iranian Parents of Children with ADHD

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Abstract: The present quasi-experimental study was performed to evaluate the efficacy of Behavioural Parent Training Program (BPTP) in reducing parental stress. The sample for this study consists of 60 parents of children with ADHD was randomly assigned to experimental and control groups. The experimental group received the Barkley's parent training program. All participants completed the Parental Stress Index /Short Form (PSI/SF) at four different time points. A Mixed Model ANOVA using the SPSS 19.0 (SPSS Inc., Chicago, IL, USA) was used in data analysis. The results from mixed model ANOVA reflected that mean changes in parental stress were significantly different between two groups. In addition, Post hoc analysis revealed a statistically significant decrease in parental stress only for the experimental group. The present study in line with some previous studies provides some preliminary evidence that supports the effectiveness of Barkley's parent training program to reduce parental stress for Iranian parents with ADHD children. The implications of the study findings and limitations of the research method along with recommendations for future studies are discussed.

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1-Introduction

Attention deficit hyperactivity disorder (ADHD) is one of the most common psychiatric disorders diagnosed in children. Research shows that ADHD not only bedevils children, but also negatively influences their parents and siblings [1-3]. Previous studies show that parents of ADHD children face many challenges and experience very high levels of stress [1, 4-8]. Studies reporting parents of children with ADHD use higher levels of alcohol consumption in response to their increased stress [9] and use corporal punishment [10] reflect that parents of children with ADHD don't use appropriate techniques to reduce stress and should be trained. Other studies also show that parents with ADHD children need more services in their community [11]. In light of the above mentioned discussion and high prevalence of ADHD among Iranian school-age children [12] the present study was conducted to evaluate the ability of the parent training program developed by Barkley to reduce parents stress.

2. Material and Methods

This quasi-experimental study was carried in Kermanshah, Iran. The study involved 60 Iranian parents (fathers=30 and mothers=30) of children with ADHD which randomly assigned to experimental and control groups. The required sample size was

determined using Snedecor and Cochran's [13] formula, with the test power=90% and $\alpha = .05$. The required information to calculate sample size was obtained from a previous study conducted in Iran [2].

$$n = 1 + 2c \left(\frac{s}{d} \right)^2$$

$$SD = \sqrt{\frac{s_{x1}^2 + s_{x2}^2}{2}} = \sqrt{\frac{26.73^2 + 42.8^2}{2}}$$

$$s = 19.55$$

$$MD = 43 - 28.1 = 14.9$$

$$n = 1 + 2 \times 7.5 \times \left(\frac{19.55}{14.9} \right)^2$$

$$n = 1 + 2 \times 7.5 \times 1.72 = 26.8 = 27$$

$$27 \times 10\% = 2.7 \approx 3$$

$$27 + 3 = 30$$

Note: SD= Standard Deviation, D= Mean Difference, C=Constant (depends on level α .05, power selected 95%)

Finally, the sample size for each group was considered 30 subjects.

Intervention: Barkley's Parent Training Program

The treatment used in this study to train parents with ADHD is called "Defiant Children". According to Barkley [14, 15], this parent training program can be applied to manage and reduce ADHD symptoms among children. The following is a description of Barkley's 10 session program. The participants met once a week for one and half hours over a period of 10 weeks.

Session one: Why Children Misbehave: Session One has two primary objectives. First, the participants were informed of the cause and maintenance factors of defiant behaviors in children. A discussion was facilitated relating to the reciprocal interfamilial and interpersonal interactions that contributed to childhood misbehaviour [14]. The second objective of the session was to commence constructive group formulation and cohesion of the participants [14].

Session two: Pay Attention: The objective of the second session was to educate the participants about the way in which their parent-child interaction styles could motivate the children to show positive behaviour. The participants were trained on how to manage their ADHD children's behaviours and how to avoid attending to negative behaviours in order to elicit positive behaviours from the children [14].

Session three: Increasing Compliance and Independent Play: The primary objective for Session Three was to enable participants to generalize the effects from the previously learned attending skills into settings outside of special time. The researcher/therapist trained the participants to effectively utilize the attending skills to increase immediate child compliance with the parents' or caregivers' commands [15].

Session four: When Praise Is Not Enough: Poker Chips and Points: The main aim of the fourth session was to set a formal system of positive reinforcement at home that would make privileges depending on the child's compliance. Participants were instructed to produce a developmentally suitable token economy for their children at home. The children would be consistently and generously be reinforced by tokens for their desirable behaviour and obeying their parents' demands [15].

Session five: Time out! And other Disciplinary Methods: The fifth session had two objectives. The first objective was to enable the participants to differentiate between and the effective use of the cost response and the time out from reinforcement behavioural procedures. The second objective was to train the participants on how to implement time-out as well as other methods of disciplining children (Barkley, 1991).

Session six: Extending Time Out to Other Misbehaviour: The primary objective of session six

was to assist the participants in resolving any problems encountered when using the time out procedure during the past week. A discussion was conducted on the application of the time out from reinforcement procedure for one or two additional non-compliant behaviours observed in the home [16].

Session seven: Anticipating Problems: Managing Children in Public Places: The seventh session mainly focused on training the participants to use the child behaviour management methods, which they had learned previously, in public settings. They were taught a four-session procedure of think aloud-think ahead to predict and decrease the children's public misbehaviour. The value of predicting problematic behaviour was emphasized as a pivotal tool in successful management of children's misbehaviour in public [16].

Session eight: Improving School Behaviour from Home: The Daily School Behaviour Report Card: At this session, the nature of children's problematic behaviours displayed at school was reviewed. The participants were taught to implement a daily report card for their children's behaviour at school. The handout entitled 'Using a Daily School Behaviour Report Card' were distributed and presented. This was followed by a discussion on incorporating the report card with the daily journal of communications between the parent and the teacher that is currently in use in these children's schools (Barkley, 1991).

Session nine: Handling Future Behaviour Problems: The objective for session nine was to encourage the participants to think about the possible future child behavior problems and how they could utilize the previously taught methods to address these problems [15].

Session ten: Booster Session and Follow-Up Meetings: This session was conducted one month after completion of the treatment. This session included an overall review of the programme. There was a discussion on the participants' use of the procedures that they had learned during the programme. Any necessary support was provided by the therapist to correct the parents' home token system [15].

The program was administered in 90 minute sessions in nine weeks and a one-month follow up session. Treatment outcome was evaluated by Parent Stress Index/Short Form (PSI/SF) [17]. The parents completed the scale at four data points (pre-intervention, post-intervention-1, post-intervention-2 and a follow up) of the research instruments.

Data were analyzed using the SPSS 19.0 software package (SPSS Inc., Chicago, IL, USA). Frequency distributions, percentages, means and standard deviations were used to describe data. In order to determine the homogeneity of the two groups in terms of age, sex, employment status and educational

attainment a series of bivariate analyses including independent t- test and Chi-Square were performed to compare the experimental and control groups. Mixed Model was used to evaluate changes in parents stress. Experimental group vs. Control group served as a between-subjects variable and time (pre-intervention, post-intervention-1, post-intervention-2 and a follow up) was a within-subjects variable.

3-Results

Of the 60 parents in the study, 60% parents in the experimental group and 46.7% parents in the control group were more than 35 years old. Five parents (16.7%) in the experimental group and 10 parents (33.3%) in the control group were between 31-35 years old and 7 parents (23.3%) in the experimental group and 6 parents (20%) in the control group were between 26-30 years old. The results showed that 16 pairs of (father and mother) parents (53.3%) in the experimental group and 14 pairs of parents (46.7%) in the control group were aware of their children's problem. The parents' awareness of their children's problem was moderate in 14 pairs of (father and mother) parents (46.7%) in the experimental group and 16 pairs of parents (53.3%) in the control group. In order to determine homogeneity in parent's age across the two groups, an independent t-test was conducted. Result of the independent t-test revealed no significant difference between two groups ($t_{(58)} = -.8$, $p = .935$). In order to compare the homogeneity of the two groups in terms of sex, employment status and educational attainment, chi-square analyses were conducted (Table 4.8). Result revealed no significant difference between

the two groups in terms of sex ($\chi^2_{(1)} = .067$, $p = .796$), employment status ($\chi^2_{(4)} = 5.09$, $p = .278$), and educational attainment ($\chi^2_{(1)} = .073$, $p = .787$).

The test results revealed no statistically significant difference between the experimental group ($M = 108.33$, $SD = 16.87$) and control group ($M = 113.26$, $SD = 16.20$) at the pre-intervention stage ($t_{(60)} = -1.15$, $p = 0.25$).

A Mixed Model ANOVA was conducted to examine mean changes in parental stress between groups and across time points. Since assumption of multivariate homogeneity of variances was violated (Mauchly's $W = .718$, $p \leq .01$), the statistics from the Greenhouse-Geisser correction for the test of the main effect and the test of the interaction effect were utilized. Results of mixed-model ANOVA revealed that the main effect for group was significant ($F_{(1, 58)} = 57.67$, $p \leq .001$, $\eta^2_p = .50$) (See Table 1).

Table 1. Tests of Between-Subjects Effects

Source	df	F	η^2_p
Intercept	1	2964.61***	0.98
Group	1	57.67***	0.50
Error	58		

*** $p \leq .001$

A significant main effect for time was also obtained, ($F_{(2.49, 144.85)} = 76.29$, $p \leq .001$, $\text{Eta-squared} = .57$). A significant time \times group was also obtained ($F_{(2.49, 144.85)} = 68.76$, $p \leq .001$, $\eta^2_p = .54$) (See Table 2).

Table 2. Tests of Within-Subjects Effects

Source		df	F	η^2_p
Time	Sphericity Assumed	3	76.30***	0.57
	Greenhouse-Geisser	2.4975	76.30***	0.57
	Huynh-Feldt	2.663844	76.30***	0.57
	Lower-bound	1	76.30***	0.57
Time \times Group	Sphericity Assumed	3	68.76***	0.54
	Greenhouse-Geisser	2.4975	68.76***	0.54
	Huynh-Feldt	2.663844	68.76***	0.54
	Lower-bound	1	68.76***	0.54
Error(Time)	Sphericity Assumed	174		
	Greenhouse-Geisser	144.855		
	Huynh-Feldt	154.5029		
	Lower-bound	58		

*** $p \leq .001$

Mauchly's $W = 0.72$, $\chi^2(5) = 18.82$, $p = 0.002$

Therefore, the results from mixed model ANOVA reflects that mean changes in parental

stress are significantly different between two groups.

In the next step of analysis, post hoc analysis revealed a statistically significant decrease in

parental stress only for the experimental group. Table

scores for the experimental group ($F_{(1, 29)}=353.42$, $P \leq 0.001$). No significant mean changes scores were found on parental stress for control group.

3 and Figure 1 depict the within-group change in parental stress of the two groups. There were trends towards larger decreases on mean parental stress

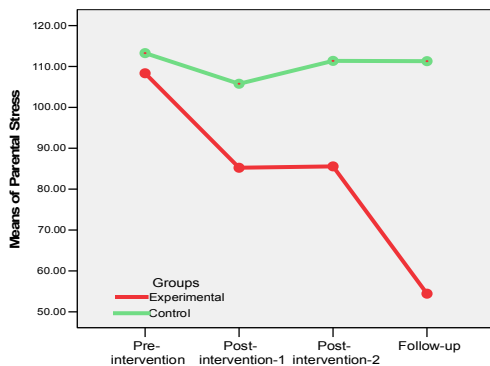
Table 3. Changes in parental stress in control and experimental group

Time points	Group			
	Experiment		Control	
	Mean	SD	Mean	SD
Pre-intervention	108.3	16.88	113.3	16.2
Post-intervention-1	85.2	14.3	105.8	18.21
Post-intervention-2	85.6	15.00	111.4	19.91
Follow up	54.4	9.52	111.3	18.58
F	353.42***		0	
Eta Squared	0.92		0	

*** $p \leq 0.001$

Figure 1 accompanied by Table 3, illustrates that only parents in the experimental group reported a statistically significant decrease in parental stress.

Figure 1. Changes in parental stress in control and experimental group



4-Discussions

A growing body of literature shows that parents of children with ADHD suffer from high levels of distress, depressed affect, and substance use [18]. Similarly, there is emerging evidence that parents of children with ADHD experience increased levels of parenting stress. Consequently, increased levels of parenting stress are associated with disruptions to the parent-child relationship and parenting practices and disruptions in parent psychological functioning [19-21].

The present study was conducted on sample of Iranian parents with ADHD children. The findings from Mixed Model ANOVA revealed statistically significant decreases in parents' reported stress in comparison to the control group. These results along with some previous studies [22-27] acknowledge the effectiveness of Barkley's 10-session parent training program to reduce parent stress among parents with ADHD children. However, a few studies didn't find statistically significant decrease in parent stress in comparison to the control group [3].

The effectiveness of this program can be garnered by the fact that parent training help parents to deal successfully with the many challenges that produce new attitudes in order to reach behavioural changes towards their children. This is supported by the notion that a change in the parenting style can lead to a change in the interactions between the parent and the child. As Johnston and Mash [28] reported, when parenting style is constructive, it can improve parental stress and self-esteem. In addition, our results is also supported by this notion that improving communication and relationships between parent and children is related with less stress, enhanced parental monitoring, and improved positive behaviours in children [29]. According to Social Learning Theory [30, 31] all behaviours are learned through a combination of positive and negative reinforcement and modelling. Thus, one of the objectives of this study was to establish formal positive reinforcement system in a home that privileges were contingent on child compliance. This discipline strategy was successful in reducing ADHD symptoms and parental stress. To encourage the participants think about the possible future child behaviour problems and utilize the taught methods in BPTP to address these problems is effective in

reducing ADHD symptoms and parental stress. Consistent with self-efficacy theory, success in behavioural accomplishments (through the acquisition of effective parenting skills) can raise mastery expectations and reduce parental stress.

In addition, social learning theory and behaviour modification techniques supported behavioural training for parents in analyzing their own problems with their children and as it was indicated using of the theories were effective in reducing ADHD symptoms, behavioural problems in children and managing parental stress.

The results from this study lend support to the contention that BPTP can have therapeutic benefits not only for targeted children with ADHD, but also for their parents. This finding, hopefully can serve as an impetus for investigating other ways in which BPTP may indirectly positively affect parents and family functioning within the ADHD population. The results of this study support the notion that parent training programmes can benefit families in a number of ways such as reconstructing and creating a new bridge for communication and interaction with their children and elimination most of related problem such as parental stress and changing their strategists toward them. There are a few limitations of the present study that are worth mentioning. First limitation that should be acknowledged is that participants were not screened for their own psychopathology. Thus, in the future studies participants should be screened for other psychological problems prior to acceptance into the research program. Second limitation of the present study is the lack of objective measures of parents' treatment outcome. Therefore, additional studies that include objective measures for measuring of treatment outcome are needed. The last limitation that should be addressed is that experimental and control groups were not matched for the severity of the child's ADHD. Previous studies show that the severity of the child's ADHD is significantly contributed with parental stress [32]. In light of this limitation, it is suggested that future studies should consider the severity of the child's ADHD in research design.

Despite the above-mentioned limitations, some practical and theoretical implications of the present study can be suggested. Theoretically, this study supported the Barkley's 10-session parent training program as an effective program to reduce parent stress in parents with ADHD children. In terms of practical implication, it is suggested that counsellors working with families of ADHD children use this training program.

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