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Exploring the Impact of Behavior Management Principles on Parent-child Relationships in Families with Children Diagnosed with ADHD

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Abstract

Parental behavior management training is a critical element of mental health interventions for children with attention-deficit/hyperactivity disorder (ADHD). However, previous research has shown mixed results regarding the effectiveness of these training programs in reducing atypical behaviors in children with ADHD. The study aimed to investigate the effect of a parent training program on the parent-child relationship among parents of children with ADHD. This experimental study involved comparing two groups: an intervention group and a control group. Two questionnaires were used to collect data: one for demographic information and the other based on the work of Parker, Tupling, and Brown. All statistical analyses were performed using the SPSS version 21 software. The study showed that the parent training program significantly improved the parent-child relationship in families of children with ADHD, with a statistical significance level of $P \leq 0.05$. This intervention positively influenced the development of the affected child. Parental behavior management training plays a vital role in improving the parent-child relationship in families of children with ADHD and can increase the overall quality of life for these families.

Keywords: Parent-Child Relationship, Behavior Management, ADHD, Parental Education.

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Introduction

The diagnosis of attention-deficit/hyperactivity disorder (ADHD) is primarily based on expert consensus, which recognizes three primary manifestations of the disorder: inattention, hyperactivity/impulsivity, or a combination of both. The current consensus regarding the etiology of ADHD suggests that it results from the complex interaction of neuromuscular and neurochemical systems. This view is supported by studies involving family dynamics, twin studies, dopamine receptor gene research, neural imaging, and neurotransmitter data [1]. Several factors have been considered about ADHD, including prenatal exposure to toxins, early pregnancy complications, mechanical damage to the fetal nervous system, as well as food additives,

colorants, preservatives, and sugars, which have been proposed as potential triggers for hyperactive behaviors. However, scientific evidence does not conclusively link these factors to the onset of ADHD [2].

The treatment of ADHD is multi-dimensional and typically involves family education and counseling, medication, appropriate classroom settings, environmental adjustments, and social-psychological interventions. Research indicates that medication alone is often insufficient to address the full range of needs in children with ADHD, and that comprehensive treatment requires a more holistic approach [3]. Parent management education is a crucial component of mental health interventions for children with ADHD. The core of many parenting programs is to teach parents effective behavioral interventions that emphasize positive reinforcement, targeting both academic and social behaviors. Group therapy has also proven valuable for improving social skills, self-esteem, and a sense of success in children with ADHD, particularly in school settings [4].

Parent management education programs are grounded in social learning theory, guiding parents on how to foster positive interactions with their children while minimizing negative behaviors and family conflicts. According to Östberg and Rydell [5], parenting education has been shown to reduce the diagnostic criteria for ADHD in children. However, other studies by Enebrink *et al*. [6] and Barkley *et al.* [7] have indicated that such programs have limited effectiveness in reducing hyperactivity symptoms. Given the mixed findings regarding the impact of parent behavior management programs on reducing atypical behaviors in children with ADHD, this study was designed to specifically examine the effect of parent management education on parent-child relationships in families of children with ADHD.

Method

This study utilized an experimental design, comparing two groups: an intervention group and a control group, to assess the impact of a parent education program based on the parental management education model on the parent-child relationship in families of children with ADHD. The study involved 40 parents (either fathers or mothers) of children diagnosed with ADHD in Saveh city. These participants met specific criteria for inclusion and voluntarily agreed to take part in the study.

The inclusion criteria were: willingness to participate, at least six months since the diagnosis and treatment of the child's ADHD, no history of physical or mental disorders in the child (such as mental retardation or chronic illnesses), the parents' literacy in reading and writing, absence of significant physical or mental disorders in the parents, and no prior involvement in similar educational programs within the last six months. The exclusion criteria included non-participation in at least two training sessions or simultaneous involvement in other similar programs.

A two-stage sampling method was used in the research. The first stage employed purposive sampling, while the second stage utilized random allocation. To calculate the minimum sample size for each group, the following formula was used:

$$n = ((z\_ (a / 2) + z\_\beta) \wedge 2\ \sigma \wedge 2) / \varepsilon \wedge 2 \quad (1)$$

Where:

- The probability of a type I error (α) = 0.05, so zα/2 = 1.96z_{\alpha/2} = 1.96zα/2 = 1.96
- The power of the test (1 - β) = 0.8
- The rate of change in the relationship index (from Khoshabi *et al.* [8]) after the intervention was ϵ = 2\epsilon = 2ϵ = 2
- The standard deviation used in this study was 4.5

Based on this calculation, the required sample size was 40. To account for possible dropouts, a 15% increase was added, bringing the total to 44 participants, though only 40 parents were included in the final study.

Two questionnaires were administered. The first was a demographic questionnaire, divided into two sections. The first section collected information about the child (age, gender, duration of ADHD diagnosis, and any other physical illnesses), while the second section focused on the parents (father's and mother's age, education level, occupation, number of children with ADHD, history of psychiatric disorders in parents, and psychiatric drug use).

The second questionnaire used was the Family Linkage Questionnaire, developed by Parker [9], Tupling, and Brown in 1979. The validity of this questionnaire has been well-documented, showing significant correlations with independent judgments of parental attention and support, with mothers typically scoring higher than fathers in these areas. To determine the reliability, the internal consistency method was used, with a Cronbach's alpha coefficient of 0.76.

The intervention program followed the Barclay model (1997) and consisted of 60-minute sessions held twice a week, in coordination with parents and local counseling authorities. The program included three phases: (1) before the program began, parents filled out the demographic and family history questionnaire; (2) immediately after the final session, parents completed the Family Inventory Questionnaire; and (3) one month after the last session, the same questionnaire was administered again. Data were analyzed using frequency, mean, standard deviation, and percentages for descriptive purposes. The Kolmogorov-Smirnov test was used to evaluate the normality of the quantitative data. The Chi-square test was employed to assess the effectiveness of the intervention, and covariance analysis in a repeated measurement model was used to control for potential confounders. All statistical analyses were performed using SPSS version 21.

Results

The study results showed that in both the control and experimental groups, approximately 5% of the participants were children aged 12. Within the control group, children aged 6, 7, and 11 years were the most frequent, each representing 20% of the group. In the experimental group, children aged 8, 9, and 10 years were the most common, each making up 20% of the sample. As for gender distribution, in the control group, 60% of the children were boys, while 40% were girls. In the experimental group, 65% were boys and 35% were girls. For the duration since diagnosis, most children in the experimental group (10 participants) had been diagnosed for 12 to 18 months, while only one child had been diagnosed for 2 years. In the control group, most children (8 participants) had been diagnosed for 6 to 12 months, and the smallest group (2 participants) had been diagnosed for 24 to 30 months.

Regarding the physical health of the children, in the control group, 20% of the children had a physical illness, whereas 80% did not. In contrast, in the experimental group, 15% had a physical illness, and 85% were free from other health issues. Statistical analysis showed that the relationship between the presence of physical illnesses and ADHD frequency was not statistically significant ($P > 0.05$).

In terms of parental demographics, the mean age of fathers in the control and experimental groups were 41 ± 6.33 and 41.95 ± 5.63 years, respectively. The mean age of mothers was 36.10 ± 4.36 years in the control group and 37 ± 4.92 years in the experimental group. Regarding educational background, in the control group, 10% of fathers had the least education, while 40% had completed high school. In the experimental group, 5% of fathers had elementary education, and 50% had high school education. Statistical tests found no significant correlation between fathers' education and ADHD frequency ($P > 0.05$).

As for mothers' education, in the control group, 10% had the least education, while 35% had a high school education. In the experimental group, 10% of mothers had primary education, and 40% had high school education. There was no significant relationship found between mothers' education and ADHD frequency ($P > 0.05$), as indicated by the chi-square test.

Concerning the history of psychiatric drug use, in the control group, 35% of the parents reported using psychiatric drugs, and 65% did not. In the experimental group, only 5% had a history of using psychiatric drugs, while 95% had not. The analysis showed a significant relationship between the history of drug use and the frequency of ADHD ($P < 0.05$).

To test the normality of the data, the Kolmogorov-Smirnov test was applied. The z-Kolmogorov-Smirnov statistics for the pre-test of care and extreme support were 0.13 and 0.168, respectively. Immediately after the intervention, the values were 0.125 and 0.130, and one month later, the values were 0.13 and 0.129. All these values had P-values ≤ 0.05, confirming that the data followed a normal distribution.

For the control group, the mean care score before the intervention was 18.55 with a standard deviation of 6.629, and the extreme support score before training had a mean of 24.00 and a standard deviation of 5.07. Immediately after the intervention, the mean care score increased slightly to 18.65 with a standard deviation of 5.33, while the extreme support score rose to 24.10 with a standard deviation of 5.52. After one month, the care score was 18.78 with a standard deviation of 6.40, and the extreme support score dropped to 23.83 with a standard deviation of 5.23.

In the experimental group, the mean care score before the training was 16.75 with a standard deviation of 5.49, and the extreme support score before training was significantly higher, with a mean of 40.33 and a standard deviation of 4.29. After the intervention, the mean care score rose to 22.12 with a standard deviation of 5.21, while extreme support increased substantially to a mean of 89.20 with a standard deviation of 4.50. A month after the training, the care score rose dramatically to 72.26 with a standard deviation of 4.60, and the extreme support score decreased to 20.67 with a standard deviation of 22.23.

The research hypothesis, "Parental management education affects the parent-child relationship of children with ADHD one month after training," was tested using the Lone test. The results showed that the F test value was not significant except for the third measurement, suggesting that the variance in extreme support remained consistent across both groups.

Analysis of Repeated Measures

The internal effects test comparing the mean care index between the two groups at two intervals (second and third) revealed that the intervention had a significant effect over time, as the P-values were < 0.05 (see **Table 1**).

Table 1. Internal effects test

Source of change	Sum of squares	Degrees of freedom	F	P-value
Time	78.656	1	17.209	0.001
Time * Group	87.113	1	19.059	0.001
Error (Time)	150.830	33		

For the between-subjects effects, the results showed significant differences between the experimental and control groups regarding the care index, with P-values below 0.05, indicating the effectiveness of the intervention (see **Table 2**).

Table 2. Between-individuals effects test

Source of change	Sum of squares	Degrees of freedom	F	P-value
Intercept	32968.136	1	537.196	P > 0.001
Group	579.108	1	9.436	0.004
Error (Time)	2025.235	33		

Figure 1 shows the mean care index changes. The graph displaying the changes in the care index across the three assessment periods showed that, in the control group, the care index remained consistent throughout the study. However, in the experimental group, the care index increased significantly one month after the intervention, indicating the positive impact of the parental management training program on the care index.

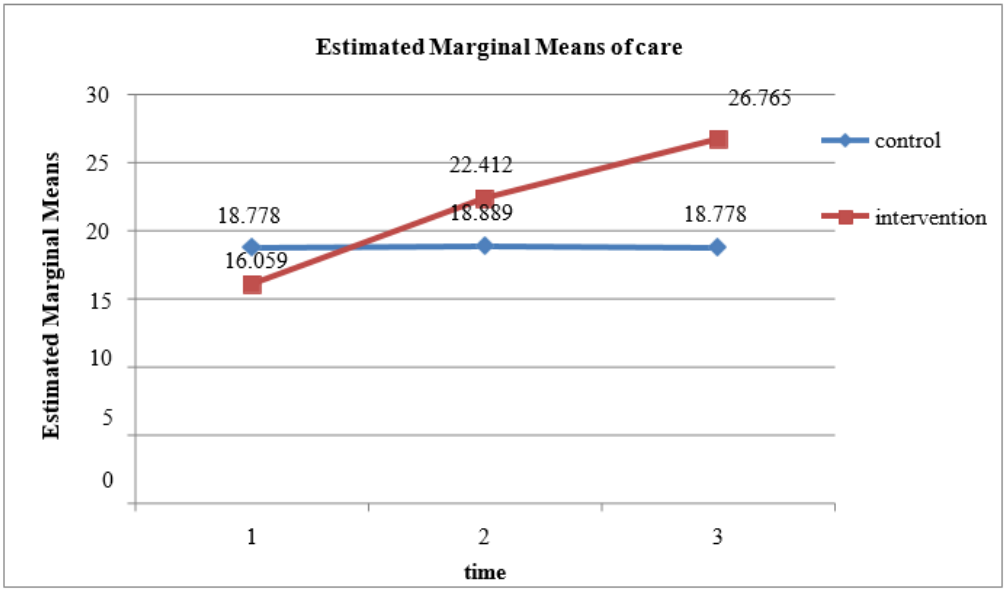

Figure 1. Analysis of the repeated measures to compare the mean of extreme support index in two groups and with two replications (second and third times)

The results from the internal effects analysis indicated that the intervention had a noticeable influence on the extreme support index over time, as evidenced by P-values being less than 0.05 (refer to **Table 3**).

Table 3. Internal effects analysis

Source of change	Sum of squares	Degrees of freedom	F	P-value
Time	2.138	1	0.501	0.484
Time * Group	0.995	1	0.233	0.633
Error (Time)	150.948	33		

Furthermore, the between-individuals effects test demonstrated that there was a significant difference in the extreme support index between the experimental and control groups, confirming that the intervention was impactful (P-value = 0.047) (see **Table 4**).

Table 4. Between-individuals effects analysis

Source of change	Sum of squares	Degrees of freedom	F	P-value
Intercept	35326.334	1	1043.252	P > 0.001
Group	140.048	1	4.136	0.047
Error (Time)	1117.438	33		

The graph displaying changes in the extreme support index over the three measurement periods revealed that the control group exhibited little variation in extreme support across all stages. On the other hand, the experimental group showed a reduction in the extreme support index at the third time point (one month post-intervention) in comparison to the initial measurement (before the intervention). This suggests that the parental management training program had a meaningful impact in lowering the extreme support index (refer to **Figure 2**).

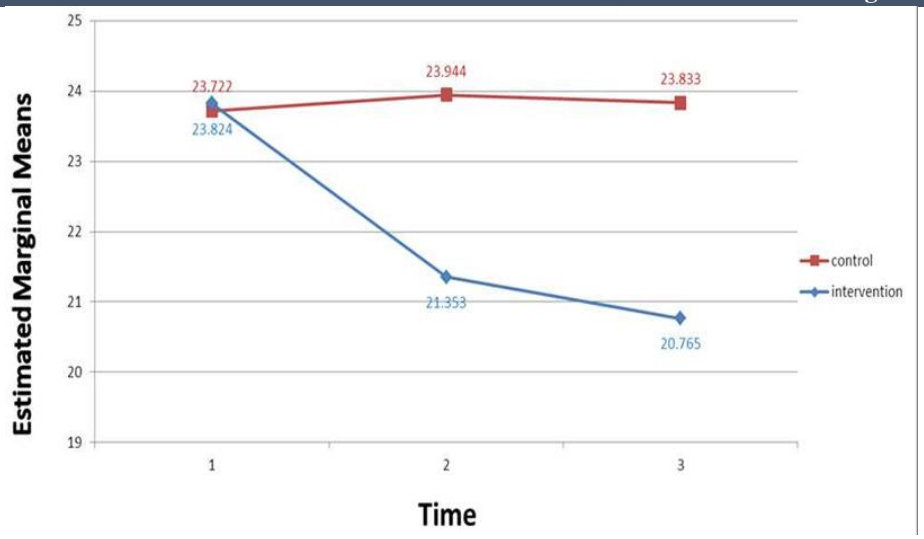

Figure 2. Estimated marginal means of extreme support

Discussion

The main aim of this study was to evaluate how parental management education influences the relationship between parents and children with ADHD in Saveh City. The results obtained before the intervention revealed that the initial scores for the parent-child relationship in the experimental group were 16.7 ± 5.8 for care and 24.4 ± 7.4 for extreme support. In comparison, the control group showed higher scores for care (18.5 ± 6.6) but lower scores for extreme support (4.20 ± 0.5), a finding that is consistent with the research by Khanjani *et al.* [10] In that study, a positive and supportive relationship between parents and children was linked to better mental health outcomes and higher self-esteem, whereas negative interactions were associated with poorer mental health and emotional difficulties.

Additionally, Esmaeilinasab *et al.* [11] conducted a study that showed positive changes in parenting practices, child management, and a reduction in ADHD symptoms through parental education programs. These findings corroborate the current study's results, confirming the value of such programs in improving parenting and managing ADHD.

After the intervention, improvements were evident in the experimental group, with mean scores for care and extreme support rising to 22.1 ± 2.5 and 20.8 ± 4.4, respectively, immediately following the training. One month later, these values further increased to 26.7 ± 4.6 for care and 20.6 ± 2.2 for extreme support. In contrast, the control group showed only slight changes, with scores of 18.7 ± 6.4 for care and 23.8 ± 5.2 for extreme support. This suggests that the parental management education program was successful in enhancing the parent-child relationship among participants in the experimental group.

These findings align with the research conducted by Tiano (2011) and McNeil, both of which also reported improvements in parent-child relationships through similar parental management programs. In addition, the study by Tahmatsian *et al*. (2011) indicated that behavior-focused training could enhance family dynamics by reducing stress, improving parental self-esteem, and fostering healthier relationships. Danforth [12] also found comparable results, which further support the efficacy of parental management training programs.

The significant upward trend observed in parent-child relationship scores in the experimental group—reaching its peak one month after the intervention—was consistent with previous studies by Rossiter and Lavaque [13] and McCart and Priester [14], as well as research by Kurdestani *et al.* (2014) and Fermand (2011).

Conclusion

This study highlights that the parental education program has a positive and statistically significant effect on the parent-child relationship for children with ADHD, with a P-value of ≤ 0.05. Parents of children with ADHD often face challenges with ineffective parenting strategies and low self-esteem in their child-rearing efforts. By equipping them with more effective tools and techniques through parental management training, this program can significantly enhance the quality of their relationship with their children. Furthermore, offering parental management education as a complementary intervention alongside traditional treatments can improve the mental well-being of the entire family. Parents will be more equipped to approach their children's challenges with a healthier mindset, improving their overall quality of life. This research emphasizes the importance of integrating parental management training programs into treatment plans, as they can foster better communication, reduce stress, and increase adaptability in families with children who have ADHD.

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References

1.
2. Pelham W, Hoza B. Intensive Treatment: A Summer Treatment Program for Children with Adhd, Psychosocial Treatments for Child and Adolescent Disorders. Empirically Based Strategies for Clinical Practice. 2010: 311-40.
3. Hetchman L. Attention–deficit disorders. In: Sadock, BJ, Sadock, VA. Eds, Kaplan & Sadock Comprehensive Textbook of Psychiatry. 8th ed. Vol. 2. Baltimor: Lippincott Wiliams & Wilkins; 2009. p. 3183.
4. Rajablo M. The Effectiveness of Management Education to Parents on Reducing Symptoms of Attention-Deficit / Excessive Kinetic Disorders. 11- 25. M.Sc. Thesis, Allameh Tabataba'i University; 2012.
5. Sadock B, Sadock V. Summary of Psychiatry and Behavioral Sciences Clinical Psychiatry Kaplan Sadock. Rezaee Translation. Tehran, Publishers: Arjmand; 2014.
6. Östberg M, Rydell AM. An efficacy study of a combined parent and teacher management training program for children with ADHD. Nord J Psychiatry. 2012; 66(2): 123-30.
7. Enebrink P, Högström J, Forster M, Ghaderi A. Internet-based parent management training: A randomized controlled study. Behav Res Ther. 2012; 50(4): 240-49.
8. Barkley RA, Shelton TL, Crosswait C, Moorehouse M, Fletcher K, Barrett S, et al. 2000. Multi-method psycho-educational intervention for preschool children with disruptive behavior: Preliminary results at post-treatment. J. Child Psychol. Psychiatry Allied Disciplin. 2000; 41(3): 319-32.
9. Khoshabi K, Moradi SH, SHojaee S. Prevalence of Behavioral Disorders among Primary School Students in Ilam Province. Rehabilitation Dis Mental Disorde. 2013; 8(29): 33-28.
10. Parker G, Tupling H, Brown LB. A parental bonding instrument. Br J Med Psychol. 1979; 52(1): 1-10.
11. Khanjani Z, Amini S, Malek A, Hashemi T. Parent Management Training To Improve Attention Deficit-Hyperactivity Syndrome in Children. Yolutionary Psychology: Psychologists Iran. 2014; 10(39): 321-11.
12. Esmaeilinasab M, Alizadeh H, Ahadi H, & Delevan A. Comparing The Effectiveness of Behavioral Parent Training with The Approach Of Adler And Reduce The Severity Of Symptoms Of Conduct Disorder In Children. J Except Child. 2009; 37(10): 227-36.
13. Danforth JS. Training parents of children with comorbid attention-deficit hyperactivity disorder and oppositional defiant disorder. Handbook of parent training: helping parents prevent and solve problem behaviors, 2010; 3: 345-78.
14. Rossiter DTR, La Vaque TJ. A comparison of EEG biofeedback and psychostimulants in treating attention-deficit/hyperactivity disorders. J Neurother. 1995; 1(1): 48-59.
15. McCart MR, Priester PE, Davies WH, Azen R. Differential effectiveness of behavioral parent-training and cognitive-behavioral therapy for antisocial youth: A meta-analysis. J Abnorm Child Psychol. 2006; 34(4): 525-41.