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The Effect of Parental Management Training Program on Anxiety and Depression of Parents of Children with Attention Deficit / Hyperactivity Disorder

Conflict of interest: nothing to declare.
Authors' contribution: Hossein Asadi-Samani – paper preparation; Mahdie Ghalenoee – collection and systematization of clinical research data; Seyedeh Narjes Mousavizadeh – data analysis and interpretation of results; Malihe Nasiri – interpretation of results.

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Abstract

Introduction. Attention deficit/hyperactivity disorder (ADHD) is a chronic and traumatic disorder that continues from childhood to adulthood and is one of the most common behavioral disorders in childhood and adolescence. The behavioral problems of these children also affect their parents. This study was conducted to investigate the effect of a parental management training program on the anxiety and depression of parents of children with ADHD.

Materials and methods. The present empirical research was conducted on 72 parents of children with ADHD referred to selected psychiatric counseling centers in Tehran. The samples were selected by the convenience sampling and randomly assigned to intervention (n=36) and control (n=36) groups. Parents of the control group did not receive training. But for the parents in the intervention group, the training program was implemented based on the Barkley Parent Management Training Model in eight sessions at the counseling centers.Data collection was done in person in both groups using a demographic-clinical checklist, Beck anxiety and depression inventories and Eyberg student behavior questionnaire before the intervention, immediately after the intervention and one month post-intervention. The obtained data analysis was done using SPSS 26.

Results. The mean scores on Beck inventories for anxiety and depression in the control group were, respectively, 14.33 and 17.92 before the intervention, 14.22 and 17.58 immediately after the intervention, and 14.03 and 18.22 one month post-intervention, with no significant change ($p>0.05$). But in the intervention group, the corresponding scores were, respectively, 14.44 and 18.25 before the intervention, 8.42 and 11.94 immediately after the intervention, and 8.31 and 11.69 one month post-intervention, with a significantly decreasing trend ($p\leq0.001$).

Conclusion. In conclusion the parent management training program was effective on the anxiety and depression of parents of children with ADHD and a decrease in the mean anxiety and depression scores of parents of children with ADHD was observed after the intervention. The implementation of the parent management training program by

improving the skills of parents in communicating with their children has reduced children's behavioral problems and has had a significant impact on parents' health. Therefore, this program can be used in schools, counseling centers and other centers referred by parents.
Keywords: attention deficit-hyperactivity disorder, parenting, parents, anxiety, depression

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Влияние программы обучения родительскому менеджменту на тревожность и депрессию родителей детей с синдромом дефицита внимания / гиперактивности

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Резюме

Введение. Синдром дефицита внимания / гиперактивности (СДВГ) – хроническое расстройство нейропсихического развития, которое продолжается с детства до взрослой жизни и является одним из наиболее распространенных поведенческих расстройств в детстве и подростковом возрасте. Поведенческие проблемы детей с таким расстройством также влияют на их родителей.
Исследование было проведено с целью изучения влияния программы обучения родительскому менеджменту на тревогу и депрессию родителей детей с СДВГ.
Материалы и методы. Настоящее эмпирическое исследование было проведено с участием 72 родителей детей с СДВГ, направленных в выбранные психиатрические консультационные центры в Тегеране. Участники отобраны методом выборки и случайным образом распределены по интервенционной (n=36) и контрольной (n=36) группам. Родители контрольной группы обучение не проходили. Для родителей в группе исследования программа обучения была реализована на основе модели обучения родительскому менеджменту Баркли в течение восьми занятий в консультационных центрах. Сбор данных проводился лично в обеих группах с использованием демографическо-клинического контрольного списка, тревоги и депрессии Бека, инвентаризации и опросника поведения студентов Эйберга до исследования, сразу после исследования и через месяц после исследования. Анализ полученных данных проводился с использованием SPSS 26.
Результаты. Средние баллы по шкале Бека для тревоги и депрессии в контрольной группе составили соответственно 14,33 и 17,92 до исследования, 14,22 и 17,58

сразу после исследования и 14,03 и 18,22 через месяц после исследования без существенных изменений (p>0,05). В группе исследования баллы составляли соответственно 14,44 и 18,25 до исследования, 8,42 и 11,94 сразу после исследования и 8,31 и 11,69 через месяц после исследования со значительной тенденцией к снижению (p<0,05, 0,001).

Заключение. Программа обучения менеджменту оказалась эффективной в отношении тревоги и депрессии у родителей детей с СДВГ, после исследования наблюдалось снижение средних показателей тревоги и депрессии у родителей детей с СДВГ. Реализация программы обучения родительскому менеджменту путем улучшения навыков родителей в общении со своими детьми позволила уменьшить поведенческие проблемы детей и оказала значительное влияние на здоровье родителей. Таким образом, эту программу можно использовать в школах, консультационных и других центрах, рекомендованных родителями.

Ключевые слова: синдром дефицита внимания / гиперактивности, воспитание детей, родители, тревога, депрессия

■ INTRODUCTION

Attention Deficit/Hyperactivity Disorder (ADHD) is one of the neurodevelopmental disorders characterized by three persistent features, inattention, hyperactivity and impulsivity.This disease affects approximately 8–13% of children worldwide. The disorder is also more common in boys than girls [1]. People with ADHD have significant impairments in interpersonal relationships with family members and peers.School performance and occupational success are often impaired, and the number of jobs in a given period of time is higher than that of people without the disease [2]. The tensions and injuries caused by this disorder may be transmitted to other members of the family.Also, based on the evidence, the mental health of the mother is closely related to the disorders of the child with ADHD [3]. In families with affected children, parents are disappointed anddiscouraged from life; Because parents have to spend all their energy to curb the child's risky behavior and as a result, they do not have time to meet each other's needs and perform marital duties.Over time, the internal tensions in such families increase and with the accumulation of frustration and discouragement, the quality of life of the parents decreases drastically [4]. The results show that the parents of such children face more stress and are prone to anxiety and depression due to the basic challenges in taking care of their children [5]. Two of the most common mental disorders are anxiety and depression.These mental disorders have attracted global attention due to their adverse effects on people's work ability and performance [6]. Parental anxiety is a feeling of worry, fear, and stress related to the role of parent or caregiver. Parental anxiety triggers include concerns about the child's growth, learning, health, well-being, and relationships with others. Parental anxiety can cause parents to avoid situations or have negative thoughts [7]. There is substantial convergence between depression and anxiety, which has been observed by common symptoms and cognitive processes and a high degree of comorbidity between anxiety and depression and other mood disorders [8]. However, there are differences in communication with parents of children with behavioral problems.In social situations, highly anxious children are more concerned about future threats. They respond with

fear and lack of expressing their feelings due to fear of confrontation and discomfort of others. These anxious characteristics may also carry over into parenting behaviors, especially in situations where parents have to deal with children who are inconsistent, argumentative, and prone to outbursts of anger. On the other hand, depressed parents complain more frequently about their mistakes and inadequacies [9]. Attention-deficit/ hyperactivity disorder is one of the most common reasons for consultation in pediatric psychiatry. Due to the complexity of these children's problems in different domains, various therapeutic approaches have been provided. Hyperactivity treatment plan can be divided into direct single intervention treatments to multiple complex interventions. Today, pharmacotherapy using stimulant drugs and behavioral therapy in parents are interventions that have received favorable empirical support [10]. Parental management training, by reinforcing desirable and neglecting or providing negative consequences for undesirable child behaviors, can cause a change in the child's behavior to a great extent, because in this case, the desired behavior is reinforced and the negative consequence is presented continuously and repeatedly immediately after the child's behavior [11]. The evidence indicates the long-term effects of this supportive intervention [12]. In the parent management training program, the establishment of rules and the importance of punishment and encouragement for target behavior are considered. This program is practical and parents should apply the solutions at home to achieve desirable outcomes [13]. Studies have revealed the relationship of parent management training with different parameters [14–16]. However, studies on the impact of these support interventions on parents' anxiety and depression are very limited and has not been investigated, especially in the cultural context of Iran.Therefore, the present study was conducted to investigate the impact of parent management training program on anxiety and depression of parents of children with ADHD in selected counseling centers in Tehran in 2021.

■ MATERIALS AND METHODS

The present study is an empirical study with randomized controlled design and including two groups. The study population consists of all parents of children with ADHD who refer to selected counseling centers in Tehran.Sampling was done using the convenience method using random allocation; For this purpose, parents of children with ADHD referred to the selected counseling centers in Tehran, who met all inclusion criteria, were enrolled.In order to randomly allocate the samples between the two intervention and control groups, the first sample was placed in the intervention group by lottery, and then the samples were placed one in the middle in the two groups. 72 parents of children with ADHD were selected and then divided into two groups of 36 people. In this study, because the children's fathers did not apply for intervention due to economic problems and working in several shifts, all participating parents were mothers. Inclusion criteria were volunteering to participate in the study, at least six months having passed since the diagnosis of the child's disorder. Absence of clearly diagnosed physical disorder, psychotic disorder, mental retardation and chronic diseases in the child with ADHD. Absence of any definitely diagnosed physical and mental disorder in parents of children with ADHD based on self-reports. Non-participation of parents in similar educational programs within the last six months, the family does not have more than one child with ADHD, and the samples do not have a crisis of losing close people in the last six months. Demographic-clinical information questionnaire was used to check the inclusion criteria. Exclusion criteria are:

not participating in two training sessions and participating in similar training sessions or programs simultaneously. Finally, after obtaining informed consent from the participants, the control group received usual careAnd the intervention group received the parent management training program based on Barkley Model (1997).

The program is as follows

First session: includes educational materials. Reliable and clear information about symptoms of inattention, hyperactivity and impulsivity was provided to parents.

Second session: The four-factor model of child-parent conflict was described and the principles of behavioral management were examined.

Third session: Parents were taught to pay attention positively to the child's appropriate social behavior and not to pay attention to inappropriate periods in special play time periods.

Fourth session: Parents were taught how to develop a reward system at home and use points or tokens.

Fifth session: parents learned how to use the cost of answering or taking tokens to punish the child for not following the instructions and minor violations of the rules.

Sixth session: Parents were taught how to use deprivation and negative reinforcement for a range of house-based rule violations, including cursing, aggression, and destruction.

Seventh session: Parents were taught how to manage and predict children's behavioral problems in public places such as stores, restaurants, and mosques and develop plans for using social reinforcers, tokens, response costs, and denying reinforcement in public situations.

Eighth session: The management of future problems, methods of working together with school staff and dealing with associated problems, such as urinary and fecal incontinence, were discussed.

The evaluation of the intervention in the first stage was done immediately after the completion of the sessions at the end of the eighth session by administration of the research tools by the parents and then one month after the end of the classes.

To collect data, a demographic-clinical checklist and Beck Anxiety Inventory, consisting of 21 four-choice items, were used. Beck's Depression Inventory contains 21 four-choice items and Eyberg Standard Child Behavior Questionnaire contains 36 items, which examine the behavioral problem variable using five choices and the behavior problem severity variable using two choices. All four questionnaires were completed in the first session by both groups (intervention and control) in counseling centers. Then in the intervention group, the parent management training program was implemented and the control group received the usual care. After the last training session and one month after the last session, all four research tools were administered to both groups in person.Intervention was implemented in 8 sessions of 60 minutes (2 sessions per week) at the hours and days that were coordinated with the parents and with the coordination of the officials of the counseling centers. Parents were given 10-minute breaks between classes for questions and answers, etc. At the completion of the intervention, the content of the training program was provided to the control group. To conduct data analysis, Kolmogorov-Smirnov test, independent t-test, chi-square and repeated measures analysis of variance were used. All statistical analyses were performed using SPSS 26.

■ RESULTS

In the present study, the mean age of women in the intervention and control groups was 37.97±5.09 and 36.33±6.08 years, respectively (p=0.22). The mean age of their spouses was 42.83±5.98 and 40.47±6.59 years, respectively (p=0.12). The mean age of affected children in the intervention and control groups was 8.28±2.10 and 8.44±2.19 years, respectively (p=0.74).The mean month at diagnosis of ADHD in the intervention and control groups was 13.14±8.82 and 12.50±4.91, respectively (p=0.71). The two groups were completely matched for gender and fathers' education level. 36.1% of affected children were girls and the rest were boys. The most frequent education level in both groups was obtained for the academic education level (69.4% in the control group and 77.8% in the intervention group). The most frequent education level of fathers in both groups was obtained for academic education level (66.7%). The highest frequency of women' jobs in the control group was obtained for housewives (50%) and in the intervention group for housewives and clerks (both 41.7%). The highest frequency of fathers' occupation in the control group was obtained for self-employment and clerks (both 41.7%) and in the intervention group for clerks (50%). Also, the result of the chi-square test showed that there is no significant difference between the two groups in terms of other demographic variables (p>0.05). Table 1 shows father's education level, mother's education level, parents' occupation, and parents' medication. The research findings showed in terms of demographic characteristicsthat despite the randomization of two groups in terms of all confounding variables such as gender, child's age, month of diagnosis, mother's age, father's age, father's education level, mother's education level, father's occupation, mother's occupation, and parents' medication, there was no significant difference in them between the two groups. Therefore, the above factors are not considered as intervening or confounding variables and had no effect on the results of the study.

Demographic variables of parents of children with ADHD in intervention and control groups

Demographic variables		Number (%)		
		Control group	Intervention group	p-value
Father's education level	Elementary	2 (5.6)	2 (5.6)	00.1
	Guidance	2 (5.6)	2 (5.6)	
	High school	8 (22.2)	8 (22.2)	
	Academic	24 (66.7)	24 (66.7)	
Mother's education level	Elementary	1 (2.8)	2 (5.6)	0.33
	Guidance	3 (8.3)	4 (11.1)	
	High school	7 (19.4)	2 (5.6)	
	Academic	25 (69.4)	28 (77.8)	
Father's occupation	Clerk	15 (41.7)	18 (50)	0.53
	Laborer	6 (16.7)	3 (8.3)	
	Self-employed	15 (41.7)	15 (41.7)	
Mother's occupation	Housewife	18 (50)	15 (41.7)	0.53
	Clerk	15 (41.7)	15 (41.7)	
	Self-employed	3 (8.3)	6 (16.7)	
Parents' medication	Yes	3 (8.3)	2 (5.6)	0.53
	No	33 (91.7)	34 (94.4)	

The results of the analysis of variance with repeated measurements showed that the average anxiety score in the control group did not change compared to before the intervention, p=0.87, but in the intervention group, there was a significant decrease (p<0.001, Fig. 1). The results of repeated measures analysis of variance showed that the mean depression score in the control group did not change compared to before the intervention (p=0.47), but in the intervention group, there was a significant decrease (p<0.001, Fig. 2). The results of repeated measures analysis of variance showed that the average score of the severity of the behavioral problem in the control group did not change compared to before the intervention, p=0.08, but in the intervention group, a significant decrease in the score was observed (p<0.001, Fig. 3).The results of repeated measures analysis of variance showed that the mean score of behavioral problems in the control group did not change compared to before the intervention, p=0.18, but in the intervention group, a significant decrease in the score was observed (p<0.001, Fig. 4).

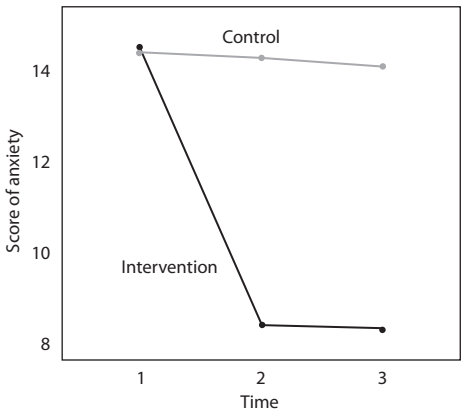

Fig. 1. Mean score of anxiety in two groups

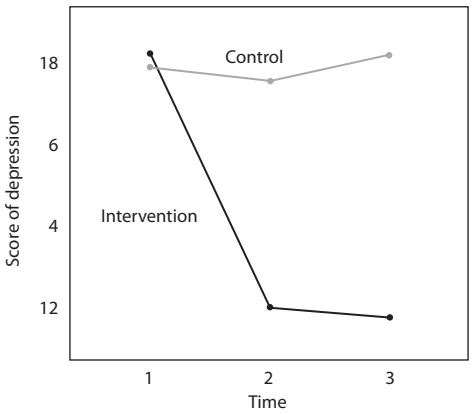

Fig. 2. Mean score of depression in two groups

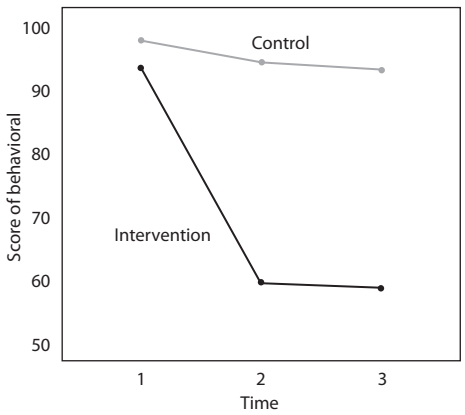

Fig. 3. Mean score of severity of behavioral problem in two groups

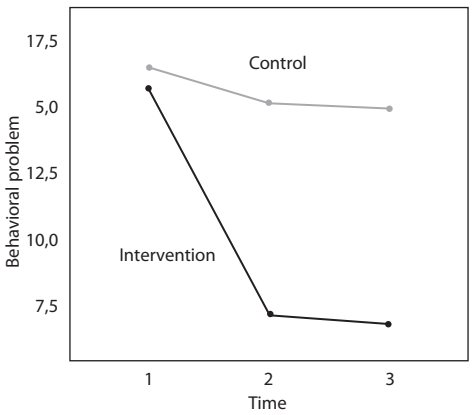

Fig. 4. Mean score of behavioral problem in two groups

■ DISCUSSION

As a great threat to the mother's sense of security, anxiety plays an important role in the quality of the mother-child relationship and the child's behavioral problems.women who have a high level of anxiety consider the world a dangerous and incurable place [17]. They experience distrust, tension, stress and conflict and are unable to control their environment and events [18]. In other words, they constantly expect the worst to happen and feel threatened. It seems that when anxiety reaches high levels, it can adversely affect women and children. These women cannot effectively communicate with their children, because the feeling of anxiety due to their insufficiency is transferred to their children in education [19]. A high level of maternal anxiety leads to parenting problems. According to the available evidence, mothers of children with ADHD suffer from increased levels of anxiety due to worries and inadequate parenting skills [20]. Based on the available evidence, parents of children with ADHD experience higher levels of stress and depression than children without ADHD [21]. A high proportion of caregivers of children with ADHD suffer from depression, which may compromise the quality of interactions with their children [22]. The present study was conducted to investigate the effect of a parent management training program on the anxiety and depression of parents of children with ADHD. The findings of the present study showed that the two groups were the same in terms of the level of anxiety of the parents of children with ADHD before the intervention in the intervention and control groups, and there was no statistically significant difference between the anxiety levels in the two groups. The findings of Hosseini Nejadet al.'s study (2020) showed that the mean anxiety scores of mothers of children with ADHD in the intervention and control groups did not differ significantly before the educational program [23]. Mehri et al. (2020) showed that before the intervention of behavioral training for parents of children with ADHD, there was no significant difference in the level of mental health of parents in the two intervention and control groups [24]. These findings are consistent with the present study. The findings of the present study showed that the intervention and control groups were the matched in terms of depression scores before the implementation of parent management program training, and no significant difference was observed between the two groups.

In line with the findings of the present study, a study by Ghasemiet al. (2019) also showed that there was no difference in the scores of children's behavioral symptoms before the intervention [16]. Despite having differences in methodologies, studied variables, and interventions implemented, the findings are consistent. Based on the findings of the present study, the mean depression and anxiety scores of parents of children with ADHD were lower immediately and one month after the intervention in the intervention group compared to the control group.Also, the mean depression and anxiety scores of parents of children with ADHD were lower immediately and one month after the intervention compared to before the intervention. These findings showed the positive effect of parental management intervention on depression and anxiety of parents of children with ADHD. In line with the findings of the present study, the results of the study by Leijtenet al. (2020) showed that educational intervention can reduce the symptoms of depression in mothers of children with ADHD [25]. In a study that investigated the effect of group therapy focused on compassion on psychological symptoms in mothers of children with ADHD, it was observed that the levels of depression and anxiety in the treatment group showed a significant decrease compared to the control group. While the

stress level of the participants was the same in both groups. Despite differences in the type of intervention, these findings are in line with the findings of the present study [26]. Also, Chou et al. (2021) in a study with a one-year follow-up reported that there was a direct relationship between ADHD symptoms of children and depression symptoms of caregivers [27]. A study by Khademiet al. (2019) showed that the intervention of the positive parenting program had a significant effect on the depression of parents of ADHD children, and the depression level scores in the intervention group immediately after the intervention were lower compared to the control group. Mehri et al. (2020) also showed that immediately and two months after the intervention, participants in the intervention group had lower levels of anxiety than the control group. In other words, their anxiety significantly improved after the intervention [24]; Despite having differences in the methodology and the type of intervention, the findings are consistent with the present study. Khademiet al.'s study (2019) showed that the intervention of the positive parenting program had no effect on the anxiety of parents of ADHD children [28], Since these findings are inconsistent with the present study, it can be concluded that the parent management training intervention has a positive effect on the anxiety of ADHD parents and this intervention can be used to improve the level of anxiety. Ghasemiet al. (2018) investigated the effect of parent management training on reducing the behavioral symptoms of children with ADHD. They observed that the behavior management program through modifying the family's interaction methods with the child with ADHD, teaching how to behave parents, increasing parents' understanding of the behavioral symptoms of the disorder, correcting their attitude about the disorder and using the correct methods of punishment and reinforcement, causes Improves children's emotional and behavioral problems and has a positive effect on parents' mental health [16]. Increased anxiety in parents with ADHD children can cause problems in communicating between family members, aggravation of children's symptoms, and an increase in children's anxiety and depression [29]. Interventional approach can be considered as an effective method to improve the level of mental health of parents, which also reduces the symptoms of children's illness. Therefore, psychological interventions can be useful to reduce anxiety [30]. Hosseini Nejadet al. (2019) observed that the average anxiety score in mothers of ADHD children in the intervention group was lower than in the control group after completing the educational program. Based on the results of the independent t-test, the difference between the means between the two groups was significant [23]; and these findings are in line with the results of the present study.Sharma et al. (2022) showed that the difference in anxiety and stress scores after the intervention of the parent support group compared to the control group was statistically significant [31]. These findings are consistent with the results of the present study despite having differences in the work method and the type of intervention. Based on the findings of the present study, the average scores of behavioral problems and the severity of behavioral problems immediately and one month later were lower in the intervention group compared to the control group; Also, the behavioral problem scores and the severity of the behavioral problem in the intervention group after and one month after the intervention were lower compared to before the intervention, while there was no difference in this regard in the control group. Ghasemiet al. (2018) by examining the effect of parent management training on reducing the behavioral symptoms of children with ADHD, observed that parent management training programs caused a significant difference in the behavioral

problems scores of these children in the intervention group compared to the control group, both at the level of the total score and at the level of the subscales of normative, social, psychosomatic, and anxiety behavior problems; so that the amount of behavioral problems in the intervention group at post-intervention decreased significantly, with the effect size being 0.46 [16]. These findings are in line with the results of the present study despite differences in the statistical population and the number of training sessions. Dekkerset al. (2022) in a meta-analysis examined 29 randomized and controlled clinical trials on parent training for children with ADHD with inclusion of positive parenting, negative parenting, children's behavioral problems, parental sense of competence, parent-child relationship quality and parental mental health as outcome measures. The findings showed that parent training had small to moderate strong positive effects on children's behavioral problems [32]. Lee et al. (2012) in a meta-analysis examined the effect of parent management training for children with ADHD in 40 studies. The findings showed that parent management training was an effective intervention to reduce the behavioral problems of children with ADHD. The stability of effects over time is a problem that deserves further investigation. These findings are in line with the results of the present study and confirm the present results. Ostberg and Rydell (2012) found that the management training program for parents with ADHD children is an effective intervention for parents [33]. Groenmanet al. (2022) reported that behavioral interventions in ADHD children were effective treatments that significantly reduced the main symptoms of ADHD, the severity of related behavioral problems, and general disorders [34]. Lin et al. (2023) identified factors related to parental stress and showed that intervention programs that were associated with reduced parental stress could also reduce the severity of ADHD children's behavioral problems [35]. In another study, Joseph et al. (2019) by examining the data of 167 parents and children aged 6 to 12 with ADHD noticed that the attendance and participation of parents in a parent training intervention could predict better grades in the results of the child's early behavior from destructive behavior and ADHD symptoms [36]. The limitations of the present study were the time limit for conducting the research and the possibility of samples withdrawing from the follow-up period. Also, the data were collected based on the parents' self-report, which is likely to be affected by the large number of items and filling out the research tools at three phases. Due to the COVID-19 epidemic and the special conditions of the families, it was not possible for some parents to participate in this educational program and postpone their treatment. As a result, such parents were not included in the study.

■ CONCLUSION

In conclusion we could demonstrate that the parent management training program was effective on the anxiety and depression of parents of children with ADHD and a decrease in the mean anxiety and depression scores of parents of children with ADHD was observed after the intervention. The implementation of the parent management training program by improving the skills of parents in communicating with their children has reduced children's behavioral problems and has had a significant impact on parents' health. Therefore, this program can be used in schools, counseling centers and other centers referred by parents.

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