

# Research Paper: Evaluation of the Effects of Positive Parenting Program on Symptoms of Preschool Children With Attention Deficit Hyperactivity Disorder



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## ABSTRACT

**Objective:** Positive Parenting Program (Triple-P) is an approved method of parent training for reducing child behavioral problems. The present study aimed to evaluate the effectiveness of standard level of Triple-P in improving behavioral problems and core Attention Deficit Hyperactivity Disorder (ADHD) symptoms of preschool children diagnosed with ADHD.

**Methods:** The study was conducted on 94 mothers who had preschool children with ADHD (53 subjects and 41 controls), referred to child psychiatry clinic at Imam Hossein Hospital, Tehran, Iran. The subjects were selected by purposive sampling method. Mothers with adjusted homogeneous demographic factors responded to study questionnaires (pre-test and post-test) in both groups. The subject group received child-rearing intervention Triple-p and the control group received the routine clinical treatment. The obtained data were analyzed by analysis of covariance in SPSS.

**Results:** A significant decrease was observed in ADHD symptoms based on Conner's questionnaire in the subjects compared to controls ( $P=0.001$ ). Parent depression index in the subject group was significant compared to control group ( $P=0.005$ ). In addition, results related to parent problem scale in the subject group indicated a significant improvement compared to control group ( $P=0.001$ ).

**Conclusion:** Our findings suggest that the Triple-p can reduce ADHD symptoms and behavioral problems and improve the capabilities of preschool children with ADHD.

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## Highlights

- Positive parenting program will reduce problems related to parenting such as depression and or frustration.
- Positive parenting program reduces behavioral problems of children with ADHD and increases their abilities.
- Applying the standard level of positive parenting program in preschool children with ADHD and their parents can improve parents' relationship.

## Plain Language Summary

Positive Parenting Program (Triple-P) is an approved method of parent training for reducing child behavioral problems. Parents of children with psychiatric diseases like Attention Deficit-Hyperactivity Disorder (ADHD) have more burden than parents with normal children. Thus, we provided some training sessions for parents of pre-school children with ADHD that included techniques for reducing problematic behaviors and increasing more adaptive behaviors. In our study, parents were evaluated in terms of stress, depression, anxiety and relational problem with their spouses and children and their children's behavioral problem before and after participating in the training group. Then they were compared with the control group. Our findings indicate that this method improves the symptoms of children with ADHD and has a positive effect on parents' relationship, too. Triple-P can also reduce parents' depression and stress.

### 1. Introduction

**A**ttention-Deficit Hyperactivity Disorder (ADHD) is one of the most common psychiatric disorders in children and adolescents and if left untreated, it could result in numerous problems for the child and his or her family (Sonuga-Barke et al., 2001). Treatment of ADHD at preschool age is very important, otherwise it can cause a lot of disabilities for the child and the family at this age and later in life (Sonuga-Barke et al., 2001).

Since the last decade, ADHD diagnosis has been increased at preschool age, with more demand for non-pharmacological intervention at this age. One reason is the lack of enough study on the efficacy and adverse effects of drugs in children at preschool age. In addition, previous research indicates that Ritalin is not so effective on school-aged children and has more side effects (Greenhill et al., 2006). If non-pharmacological therapies start at lower ages, before the emergence of other disorders and the occurrence of educational and behavioral problems or loss of self-confidence, treatment can be simpler and more effective (Daley & Thompson, 2007).

Training parents about the methods of behavioral management has been suggested as the first treatment of reducing the ADHD symptoms at preschool age (Conner, 1997). Besides, many studies support the effectiveness of this method (Jones et al., 2007; Chronis, Jones, &

Raggi, 2006). Parenting practices are in one way different from parenting style as the former focuses on specific parenting behaviors related to nutrition and physical activity while the latter emphasizes on parent-child interactions in different situations (Darling & Steinberg, 1993; Sleddens, Gerards, Thijs, Vries, & Kremers, 2011). In addition, parenting interventions seem to have positive long-term effects on a range of other problems at young age, namely mental, emotional and behavioral disorders; it also affects successful developmental competence (Sandler, Schoenfelder, Wolchik & Mackinnon, 2011).

In particular, positive parenting has been suggested as a critical external factor with strong influences on child's follow-up issues. In particular, to be a supportive parent since the very young ages of the child, has been proven to positively affect child's development in cognitive, behavioral, and psychological aspects (Beckwith, Rodning, & Cohen, 1992; Eshel, Daelmans, deMello, & Martines, 2006; Landry, Smith, Swank, & Guttentag, 2008).

Parenting is especially important because of the familial nature of the ADHD disorder. In addition much evidence indicates that such behaviors and ADHD symptoms will appear during child development or even consolidate with comorbid psychopathologies, and so on (Johnston, Mash, Miller, & Ninowski, 2010). In this regard, three interventions are considered as the most effective child-rearing interventions that can reduce the ADHD symptoms in children at preschool age; one of them is Positive Parenting Program (Triple-P) which consists of different

training levels. Triple-P is a multi-level parenting and family support strategy developed by the University of Queensland in Brisbane, Australia.

It uses social learning principles and adopts a supportive system-contextual or ecological perspective in parents. The program is widely supported at international level and several related programs have been developed so far to address parents' special needs (West & Sander, 2012). The standard level of Triple-P method is suitable for training the normal children. This level was taught to a group of child and adolescent's psychiatrists in Iran and its effectiveness was confirmed on mothers with normal and ADHD children at preschool age.

Considering the importance of non-pharmacological treatment of ADHD at preschool age, evaluation of this kind of treatment in this age group in Iran is essential. The innovation of this research is the use of standard level Triple-P to reduce the symptoms of ADHD in preschoolers. This level is not specific for children with ADHD, but according to our study, it can be useful in reducing symptoms of this disorder. Paying attention to children's age in our research is also of great importance. The study children were of preschool age and for the first time in Iran, the standard level Triple-P was conducted for ADHD children in this age group. In addition, the number of the participants was higher than other similar research studies. Therefore, we evaluated the impact of implementing Triple-P on preschool aged children suffering from ADHD.

There are several studies in the literature in this topic. Dean et al. (2003) examined Triple-P in a group of people and found that this program could promote parents' knowledge about child rearing and improve children's behavior and these effects were persistent for 12 months (Dean, Myers, & Evans, 2003). Besides, Leung, Sanders, Francis, & Joseph, (2006) examined the effectiveness of the Triple-P in a government child-health service context with 661 Chinese parents of preschool and primary school-aged children in Hong Kong.

They showed significant decrease in disruptive child's behaviors, levels of parenting stress, general stress and anxiety and an increase in parenting sense of competence as well as lower levels of family earnings in the relative social and professional position of the newly immigrant family, and greater pre-intervention levels of parenting stress (Leung et al., 2006). Furthermore, (McTaggart & Sanders, 2007) reported that parents who completed the Triple-P are equally likely to succeed in changing their parenting practices. Their findings suggest the robust-

ness of intervention effects across a diverse range of parents (McTaggart & Sanders, 2007).

The evidence for the efficacy of Triple-P is supported by a series of controlled trials in Australia, although similar trials are in progress in several other countries in Europe and North America (Sanders, 1999). A series of studies have shown that Triple-P is effective in a number of delivery formats (group, individual, phone-assisted and self-directed) with significant reductions in both observed and parent-reported disruptive behaviors, increased parental self-efficacy, reduced levels of dysfunctional parenting (laxness, over-reactivity and verbosity), parental anger, depression, stress, marital conflict and work stress (Ireland, Sanders, & Markie-Dadds, 2003).

Leung et al. (2006) also evaluated Triple-P on Chinese parents of children with early onset conduct-related problems in Hong Kong. They showed significantly lower levels of child behavioral problems, less parenting styles impairment, and higher parental sense of competence (Leung, Sanders, Leung, Mak, & Lau, 2003). Meanwhile, Whittingham, Sofronoff, Sheffield, & Sanders, (2008) studied 59 families with children suffering from autism spectrum disorders aged between 2 and 9 years.

Using Stepping Stones Triple-P, the researchers reported that the parents' expectations were better met, their children exhibited acceptable behavior, and their relationship with their partners got better (Whittingham et al., 2008). However, Danforth, Harvey, Ulaszek, and Mckee (2006) Evaluated the effects of group parent training on parent performance, and on the response of 45 children with ADHD and defiant aggressive behavior and reported reduced children's hyperactive, defiant, and harmful behavior, enhanced parenting style, and minimized parents' stress (Danforth et al., 2006). In a case study conducted by Daley, Jones, Hutchings and Thompson (2009), three non-pharmacological treatments (one of them was positive parenting) were evaluated in order to reduce ADHD symptoms among preschool aged children (Daley et al., 2009).

In addition, Tehranidoost, Shahrivar, MahmoudiGharaie, and Alaghband-Rad (2009) conducted a study on 120 mothers in Tehran. The results revealed that performing Triple-P child-rearing program improved children's behavior, parents' problems and child rearing methods (Tehranidoost et al., 2009). Moreover, Moharreri, Shahrivar, Tehranidoost, and MahmoudiGhara (2008) performed a study on 30 parents with ADHD school-aged children and compared them

to controls. They performed standard Triple-P method and observed that ADHD symptoms improved along with the child-rearing scales (Moharreri et al., 2008). After an initial evaluation of the group teen Triple-P program for parents of teenagers, Ralph and Sanders reported significant reductions in conflicts with their young children and the measures of negligent, strong reactions and lack of communication with parents about parenting issues (Ralph & Sanders, 2003).

Because the medication efficacy has been less studied at preschool age or there is controversy among many experts in this regard, alternative methods, including Triple-P can be of great help for managing this disorder at this age. Thus, this research aimed to study the effects of Triple-P on ADHD symptoms of preschool children.

## 2. Methods

This study is a randomized controlled trial. The study population consisted of parents of ADHD children referred to Imam Hossain Psychiatry Clinic in Tehran, in 2010 and 2011. A total number of 110 parents with preschool-aged children diagnosed with ADHD were recruited from Child Psychiatry Clinic of Imam Hossain Hospital with convenience sampling method. The parents were being interviewed before participating in the study to check the inclusion criteria.

The inclusion criteria were having passed at least 5th grade education, having a preschool child with ADHD diagnosis according to child psychiatrist interview, lacking untreated major psychiatric problems such as psychotic disorders or bipolar disorders (Parents' psychological health were examined by psychiatrists in Imam Hossain Hospital based on DSM-IV).

The study children should be under stable dose of medication for at least one month. If there were a need for changing medication or its amount, then their mothers would be excluded from the study. In addition, if parents missed more than 3 training sessions they were also excluded. All participants signed a written informed consent. Then, eligible individuals were randomly assigned into control and treatment (subject) group.

After all parents completed a demographic form and pre-test questionnaire, a psychoeducational session about ADHD was held for all parents. Then, the subject group attended in a Triple-P program (Standard level). The subject parents participated in 2-hour sessions per week for 4 weeks followed by 4 phone-based sessions. Each training group included 12 to 15 participants. The

first 4 sessions were training sessions. In the next 4 sessions, family problems during practicing and conducting methods in house were addressed. The experienced psychiatrists conducted the course. The experts from the University of Queensland, Australia have taught The standard level of Triple-P to some Iranian child and adolescent psychiatrists and the Iran Ministry of Health confirmed its effectiveness in a large group of mothers with normal children.

Parents in the control group received conventional managements based on routine clinic program, after receiving a psychoeducational session about ADHD. At the end of 8 weeks, the subject and control groups completed the same questionnaires. During the study period, some participants of the subject group were excluded because of more than three sessions absence. In addition, some participants were excluded from the control group due to lack of cooperation in filling the final questionnaires or the need to change their medication during the study. Finally, 94 participants (53 in the subject group and 41 in the control group) finished the study. The obtained data were presented as Mean $\pm$ SD. A series of Analysis of Covariance (ANCOVA) were performed to compare the groups before and after the intervention. All of these analyses were done in SPSS for Windows (version 19; SPSS Inc., Chicago, IL, USA).

The Family Background Questionnaire provides reliable family history information. Reliability and validity analyses suggest that it is a useful screening instrument for obtaining family history information (Melchert & Kalemeer, 2009). A brief version of this instrument assesses parental responsiveness, child maltreatment, and parental substance abuse. This questionnaire contains essential biographical information, including 1. Name, age, gender and date of birth of the child; 2. Parents' marital status and relationship with the child; 3. Their current employment status; and 4. Educational background and total family income (Moharreri et al., 2008). The scale has good test-retest reliability and construct validity and internal consistency obtained by Cronbach  $\alpha$  as 0.79 to 0.95 (Melchert & Kalemeer, 2009).

The Conner's ADHD Rating Scale, Parents' Form screens and evaluates treatment results. This 27-item test is an abbreviated and revised form of an unabridged 93-item version, and parents should respond to it before and after the program. The scale is useful for children aged 3-17 years old and its diagnostic validity and reliability are consistent with DSM-IV criteria (Conner, 1997). Its subscales include oppositionality, cognitive problems, inattention, hyperactivity, and ADHD index. Its internal

consistency is around 0.75 to 0.90 and the test-retest reliability with 8 weeks interval is 0.6 to 0.9. Construction validity of this scale is obtained by factor analysis (ZargariNejad & YekkeYazdandoost, 2007).

The 30-item Parenting Scale measures the dysfunctional discipline style in parents. It yields a total score based on three factors: laxness (permissive discipline); over-reactivity (authoritarian discipline, displaying anger, and irritability); and verbosity (overly long reprimands or reliance on talking) as measured on a 7-point scale. The scale has acceptable internal consistency for the total score (0.87), laxness (0.87), over-reactivity (0.83) and verbosity (0.82) subscales. This scale can differentiate between parents of clinic and non-clinic children. It correlates with self-report measures of child's behavior, marital discord, and depressive symptoms, as well as observational measures of dysfunctional discipline and child behavior (Arnold, O'leary, Wolff, & Acker, 1993).

The Parent Problem Checklist has 16 items that measures inter-parental conflict on child rearing. The Parent Problem Checklist (PPC) has high internal consistency ( $\alpha=0.92$ ). It has also high test-retest reliability ( $r=0.90$ ) (Dadds & Powell, 1991). The 42-item Depression, Anxiety Stress Scale measures parental levels of depression and anxiety. The scale has high reliability for the depression (0.91), anxiety (0.81), and stress (0.89) subscales and good discriminative and concurrent validity (Moharreri et al., 2008).

Parenting Sense of Competency Scale was made by Giboud-Wallston and Wandeman in 1978. A 16-item version of this questionnaire, "being a parent scale", was used to assess parents' view of their competence as parents' satisfaction with their parenting role and feeling of efficacy as a parent. The total score shows a good internal consistency ( $\alpha=0.79$ ) (Bor, Saners, & Marki-Dadds, 2002). Other positive parenting studies have already used all above-mentioned questionnaires and Iranian researchers approved their validity.

### 3. Results

In the present study, 110 parents participated, but 93 completed the study. Data analysis was performed by analyses of covariance. Result showed that the Mean±SD ages of the children in the treatment and control group were 4.2±1.09 and 3.9±1.23 years, respectively. Data analysis showed no significant difference between two groups ( $t=0.92$ ,  $df=82$ ,  $P=0.35$ ). Table 1 presents the other descriptive statistics of study participants.

Data analysis revealed no significant difference between two groups regarding sex of children ( $\chi^2=0.03$ ,  $df=1$ ,  $P=0.83$ ), mothers' education ( $\chi^2=4.42$ ,  $df=5$ ,  $P=0.53$ ) and mothers' employment ( $\chi^2=2.98$ ,  $df=1$ ,  $P=0.08$ ). According to Table 2, ADHD mean of the groups indicated that with 99% confidence, Triple-P has a positive and significant impact on ADHD. Thus, this program could reduce the symptoms of ADHD in the subject group ( $F=7.21$ ;  $P<0.01$ ).

Table 1. Frequency and percentage of study participants

Variable	Levels of Variable	Group			
		Experiment		Control	
		No.	%	No.	%
Sex of children	Male	46	48.9	35	37.2
	Female	7	7.4	6	6.4
Education of mothers	Under diploma	5	5.4	8	8.7
	Diploma	29	31.2	20	21.5
	Associate degree	6	6.5	5	5.4
	Bachelor and master degree	13	14.0	7	7.5
Job status of mother	Employed	7	7.5	11	11.8
	Not employed	46	49.5	29	31.2

**Table 2.** Analysis of covariance to measure difference of the subject and control groups scores regarding Conner's total score in post-test with pre-test control

Conner's Total Score	Type III Sum of Squares	Degree of Freedom	Mean Square	F	Significance Level
Pre-test	5140.55	1	5140.55	45.55	0.00
Group (subject*control)	813.98	1	813.98	7.21	0.009
Error rate	7560.51	67	112.84		

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Table 3 presents the covariance test results to measure difference of subscales of Conner's ADHD rating scale with pre-test control through covariance. As it is seen, the results indicate that Triple-P was effective on cognitive problems of inattention ( $F=9.66$ ,  $P<0.01$ ), hyperactivity ( $F=9.56$ ;  $P<0.01$ ), oppositional behavior ( $F=13.56$ ,  $P<0.01$ ), and ADHD index ( $P<0.01$ ,  $F=9.00$ ) improvement.

Table 4 indicates the covariance test for difference measures of depression, anxiety and stress with pre-test control. The results of Table 4 indicate that Triple-P was effective in the depression ( $F=4.94$ ,  $P<0.05$ ) and stress ( $F=3.74$ ,  $P<0.05$ ) improvement; however, Triple-P had no effect on parents' anxiety ( $F=1.74$ ,  $P=0.19$ ).

According to Table 5, "being a parent" mean value of the two groups indicated that Triple-P had a positive and significant impact on "being a parent scale" ( $F=19.99$ ;  $P<0.01$ ). In doing so, Triple-P had a positive and significant impact on parent problem checklist ( $F=18.51$ ;  $P<0.01$ ) and also a positive and significant impact on parenting scale and resulted in improving "parenting scale" ( $F=35.18$ ;  $P<0.01$ ).

#### 4. Discussion

This study was designed to evaluate the effectiveness of implementing the standard level of positive Parenting Program (Triple-P) in preschool children with ADHD and their parents. Our findings indicate that

**Table 3.** Analysis of covariance to measure difference of the subject and control groups scores regarding subscales of Conner's ADHD scale with pre-test control

Variables	Type III Sum of Squares	Degree of Freedom	Mean Square	F	Significance Level	
Cognitive problems-inattention	Pre-test	134.83	1	134.83	8.67	0.004
	Group (subject*control)	150.24	1	150.24	9.66	0.003
	Error rate	1414.75	91	15.54		
Hyperactivity	Pre-test	350.67	1	350.67	16.37	0.00
	Group (subject*control)	206.72	1	206.72	9.56	0.003
	Error rate	1948.93	91	21.41		
Oppositional behavior	Pre-test	70.39	1	70.39	5.95	0.01
	Group (subject*control)	160.33	1	160.33	13.56	0.00
	Error rate	1075.97	91	11.82		
ADHD index	Pre-test	628.46	1	628.46	10.67	0.002
	Group (subject*control)	530.0078	1	530.0078	9.006	0.003
	Error rate	5355.36	91	58.85		

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**Table 4.** Analysis of covariance to measure difference of the subject and control groups scores in depression, anxiety and stress post-test with pre-test control

Variables		Type III Sum of Squares	Degree of Freedom	Mean Square	F	Significance Level
Depression	Pre-test	965.82	1	865.82	17.53	0.00
	Group (subject*control)	272.29	1	272.29	4.94	0.02
	Error rate	5011.00	91	55.06		
Anxiety	Pre-test	768.97	1	768.97	23.54	0.00
	Group (subject*control)	55.86	1	55.86	1.74	0.19
	Error rate	2956.02	59	32.48		
Stress	Pre-test	655.84	1	655.84	8.31	0.005
	Group (subject*control)	295.51	1	295.51	3.74	0.04
	Error rate	7176.83	91	78.86		

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this method improves the symptoms of children with ADHD and has a positive effect on parents' relationship. This finding is in line with many studies indicating the benefits of group-administered Triple-P as an early intervention program for children with disruptive behavior (Whittingham et al., 2008; Markie-Dadds, Sand-

ers, & Turner, 1999; Sanders & McFarland, 2000; Zuckerman, Silburn, Burton, & Blair, 2000; Sanders, Kirby, Tellegen, & Day, 2014). Leung et al. (2003) strongly confirmed the efficacy of Triple-P in reducing parental reports of children's conduct problems and in promoting more harmonious family relationships in Chinese

**Table 5.** Analysis of covariance to measure difference of the subject and control groups scores regarding "being a parent" scale, parent problem checklist, and parenting scale post-test with pre-test control

Variables		Type III Sum of Squares	Degree of Freedom	Mean Square	F	Significance Level
Being a parent	Self-regulation Pre-test	5045.59	1	5045.59	83.92	0.001
	Group (subject*control)	1201.88	1	1201.88	19.99	0.001
	Error rate	4027.85	67	60.11		
Parent Problem Checklist	Self-regulation Pre-test	8764.77	1	8764.77	47.35	0.001
	Group (subject*control)	3426.47	1	3426.47	18.51	0.001
	Error rate	11474.47	62			
Parenting Scale (PS)	Self-regulation Pre-test	5165.65	1	5165.65	15.95	0.001
	Group (subject*control)	11385.57	1	11385.57	35.18	0.001
	Error rate	22658.12	70	323.68		

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parents living in Hong Kong (Leung and et al., 2003). In Sanders (1999) study, the effect of standard positive parenting on parents with preschool ADHD children with comorbidities was compared to its advanced form and the control group. At the end of the study, the same effect was noted in both treatment groups as behavioral problems reduced in ADHD children compared to the controls (Sanders, 1999). Danforth et al. (2006) also showed that Parent Management Training (PMT) using the behavior management flow chart on parents of children with ADHD improved parenting behaviors and reduced parents' stress (Danforth et al., 2006).

In Moharreri et al. (2008) study, the parents participating in the Triple-P group displayed significant reduction in the mean number of problems identified between parents on child rearing. This reduction was significant in the over-reactivity, laxness, and verbosity of the studied parents (Moharreri et al., 2008). Such results were similar to Ralph and Sanders study results in terms of reducing the parents' disagreement with their partner over parenting issues and improving their style (Ralph & Sanders, 2003). Meanwhile, after intervention of Stepping Stones Triple-P among families with children with autism spectrum disorder aged between 2 and 9 years, Whittingham et al. (2008) demonstrated significant improvements in parental reports of child behavior and parenting styles with the treatment effects for the child behavior, parental over-reactivity, and parental verbosity being maintained at 6 months follow-up (Whittingham et al. 2008).

One of the important findings of this study was the impact of positive parenting program on ADHD symptoms in preschool children suffering from this disorder. By reviewing the obtained results, we concluded that training parents with Triple-P methods could reduce the ADHD symptoms in their children. These findings are consistent with the findings of previous studies. The results of Moharari study, conducted by standard level of Triple-P among elementary school students, are in line with the results of the present study among preschoolers. Moharreri et al. (2008) concluded that by implementing positive parenting program, the ADHD-related symptoms would be improved (Moharreri et al., 2008).

A finding of Daley study also suggests a reduction of hyperactivity symptoms using this program (Daley and et al., 2009). In our study, along with reducing overall disorder symptoms, the Triple-P method was effective in reducing Conner's three subscales and could reduce the symptoms of ADHD. This study is the first group research on Triple-P in Iranian parents with ADHD chil-

dren in preschool age. It seems that the Triple-P is compatible with Iranian culture.

Applying Triple-P on Iranian families brings considerable comfort in lowering the risk of dealing with advanced and prolonged oppositional/antisocial aspects of ADHD. Furthermore, the results of the present study indicate that Triple-P can also reduce parents' depression and stress. This can be the result of parents' empowerment feeling in parenting. As mentioned earlier, Ireland et al. (2003) reported the positive feeling of parents in parenting that lasted after 3 months (Ireland et al., 2003). While in the present study, no effect was observed on parents' anxiety after evaluation of the results. In contrast, Moharreri et al. (2008) reported a significant reduction in the parents' level of depression, anxiety, and stress scores (Moharreri et al., 2008).

The discrepancy in the results of the present research and Moharrari study could be due to study subjects of Moharrari who were children aged 6-12 years, while our study was conducted on preschoolers. Besides, parents are worried that their children might experience the relapse symptoms when entering school and facing harder homework. This can be a factor of preserving their anxiety in high level. Likewise, Leung et al. (2006) following intervention on their study participants, reported significantly lower levels of child behavior problems, lower parenting stress, lower depression, anxiety and stress scores, and higher parenting sense of competence.

In this study, positive parenting training had a positive and significant impact on parents' problem checklist and reduced their problems. In a study conducted by Tehranidoost et al. (2009) performing Triple-P improved parents' problems and parenting method (Tehranidoost et al., 2009). Another finding of our research points to the parenting improvement, which is consistent with other studies. Sanders (1999) performed an advanced form of Triple-P on some families having ADHD children aged 5 to 9 years and found a significant decrease in destructive behavior and improvement in parenting patterns. Besides, the feeling of having better positive-parenting ability in child rearing was reported in comparison to controls and the positive impacts were persistent at least for 3 months.

In Moharreri et al. (2008) study, Triple-P was effective on the reduction of dysfunctional parenting style, as the post-intervention compared the subscale scores and the total score of parenting scale in the subject group with those in the control group (Moharreri et al., 2008). Dean et al. (2003) conducted a research on positive parenting

program in a sample group of the society and reported that the program could increase parents' knowledge about parenting methods.

Considering the difficulties in the rearing of ADHD children compared to non-ADHD children, the affected families need parenting patience, skills, and abilities, and as much as these families acquire parenting skills and receive proper education, their abilities will be increased in controlling the behavior of their children. Positive parenting program for parents of ADHD children will improve their parenting skills and reduce problems related to parenting such as depression and frustration. These methods also reduce behavioral problems of children and increase their abilities.

One of our study limitations was the absence of fathers in Triple-P sessions and the mothers were the only receivers of the training. The other limitation of the present study was comorbid disorders, which overlooked in the studied children. Therefore, we suggest to do further work on these topics in the future similar studies. Triple-P is defined as a brief and time-saving program with significant impact on therapist's skills, self-confidence and satisfaction of advising parents of children with behavioral problems. Thus, we suggest its use for public health and in line with preventing psychopathology in children. Future work can no doubt lead us to other vast applications of Triple-P.

## Ethical Considerations

### Compliance with ethical guidelines

All participants signed written informed consent and could leave the study whenever they wished. The participants' personal information was kept confidential. The routine therapy of children was continued; however, if drug adjustment were required, the medication would be changed but the participant would be excluded from the study.

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### Authors contributions

Conceptualization: Mojgan Khademi; Methodology: Katayoon Razjooyan, Najmeh Khosrovan Mehr; Investigation: Rozita Davari Ashtiani; Writing—original draft: Mojgan Khademi, Najmeh Khosrovan Mehr; Writing—

review & editing: Fatemeh Ayatmehr, Najmeh Khosrovan Mehr; Resources: Mojgan Khademi, Najmeh Khosrovan Mehr; and Supervision: Fariba Arabgol.

### Conflict of interest

The authors declare no conflict of interest.

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