



Treatment Program for ADHD students: A Meta-Analysis study

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Abstract: In this study the researcher examined treatment program for students with attention deficit hyperactivity disorder (ADHD) in Iran. A comprehensive search of the literature in Iran from 2000 to 2012 yielded 11 treatment studies that employed a control group of students with ADHD and measured the effect of the treatment program on reducing ADHD. Across 11 studies of students with ADHD, the mean weighted effect size was -.49. This meta-analysis study show that treatment programs effected on ADHD students.

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1. Introduction

Attention deficit hyperactivity disorder is an area of psychological disorders in which the deficit of attention is the main symptom. Remschmidt et al (1) and Sass et al (2) explain three characteristics of attention deficit hyperactivity disorder (ADHD) that's included (a) lack of attention such as forgetfulness and distraction (b) impulsiveness such as rash, risky behavior, and (c) hyperactivity such as restless activity. From a psychological perspective, attention is a cognitive approach, with effectiveness determined by the ability of an individual to suppress troubling activity, to plan and persist in their aim Eisert et al., (1993, cited in 3). Furthermore, a skill to focus on the task and to follow it even if not recognized as interesting is an essential point. An attention disorder can present as a concentration disorder, as a disorder of performance, or as a syndrome deficit of attention.

There are different theories about the reasons of the deficit attention. According to Lauth (1998, cited in 3), deficit attention includes a combination of biologically determined reactivity of the nervous system and failure to self-regulate and environmental disturbances. Students who cannot centralization, are impatient and evoke negative responses of the environment can start perception of social refusal. The continued experience of refuse at school mixed with the vulnerability of the nervous system are thinking to make a negative perception evoking compensatory behavior, such as, aggressive comic behavior, feeling alone and depressive status. In organize to decrease such symptoms, the creation and protection of a supportive

and caring home situation would appear to be important. Students must have a feeling of being accepted, and be able to grow trusting relations and a belief that there are ways in

which they can be helped. This situation can be quite hard to achieve where parents display troubles similar to their children. Attention deficit hyperactive disorder troubles appear not just limited to childhood and relative dynamics may influence may reason the condition to persevere. Based previous studies, the treatments of ADHD have focused on pharmacology, behavioral, cognitive, cognitive-behavioral, and neural treatments (4-12). A review of the literature between 2000 and 2012 in Iran identified 28 different kinds of treatment program for ADHD children such as combination treatment, self-control treatment, self-regulation, cognitive, cognitive-behavioral, cognitive play, behavioral play, motor-perceptual rehearsal, functions management training, verbal self-education training, parenting educational positive, group therapy of parents, parental constructive program, and stress coping skills training. The Researchers show that these treatment's effectiveness on attention deficit hyperactivity disorders (13-24).

2. Method

In this meta-analysis study, the researcher used published journal articles on the topic of effectiveness intervention/treatment programs on attention deficit hyperactivity disorder from SID and Irandoc website in 2000 - 2012. Database search of SID and Irandoc website with the following keywords:

attention deficit, hyperactivity disorder, ADHD, intervention, treatment and instruction. In the preliminary database search, 72 articles were recognized of SID website and 64 dissertations and abstract were recognized of Irandoc website. All finding from SID and Irandoc website were screened for inclusion based on the title and abstract using the following limitations: The study must have focused on

an intervention intended to improve ADHD, the study must have been conducted and published in Iran, and the sample must have included students with ADHD and students at risk for ADHD. After reviewing the preliminary articles employing the aria explain above, total copies of eleven articles were recognized for possible inclusion (see Table 1).

Table 1. Total Article

Topic	Author	Type of Research	Treatment /session
1. Effectiveness of self-control treatment on social skills in ADHD students	Beh-Pajooh (2007)	Qusi-Experimental	Self-Control/4
2. Effectiveness of self-regulation of attention behavior, self-regulation of motivational behavior and verbal self-instruction on symptoms of attention deficit/hyperactivity	Moradi & colleagues (2009)	Qusi-Experimental	Self-regulation of attentional behavior, self-regulation of motivational behavior and verbal self-instruction/10
3. Effectiveness of cognitive behavioral on self-perception in ADHD students	Salehi & colleagues (2011)	Experimental	Cognitive behavioral/19
4. Effectiveness early play treatment on attention of ADHD students	Shooshtari and colleagues (2011)	Experimental	Play treatment /12
5. The Effectiveness of Using Perceptual-Motor Practices on Behavioral Disorder among Five to Eight Year Old Children with Attention Deficit Hyper Activity Disorder	Dehghan & colleague (2010)	quasi-experimental	Perceptual-Motor Practices/18
6. The Efficacy of Short-Term Executive Functions Training on the Reduction Symptoms of Attention Deficit and Hyperactivity of Elementary Boy Students in Esfahan Metropolitan Area	Saheban (2010)	Experimental	Short-Term Executive Functions Training/9
7. Effectiveness of Neurofeedback, Retalin, and Drade Combination on Reducing ADHD	Yaghubi (2007)	Qusi-Experimental	Nerufeedback, Retalin & Drug Combination/10
8. Effectiveness Three Treatment Method on Reducing ADHD Male Great Three and Four in Shiraze Elementary school	Hadianfard (2000)	Experimental	Verbal Self-Education and Mother Verbal Self-Education/8
9. The Effectiveness of Positive Parenting Program of the Mental Health of Mothers with Children Suffering from Attention Deficit/Hyperactivity Disorder	Jafari (2011)	quasi-experimental	Mental Health
10. Effectiveness of Parental group therapy ADHD children on Behavioral Disorder children	Houshvar (2009)	Qusi-Experimental	Parental group therapy/8
11. Effectiveness of parental Constructive Program on Behavior Disorder of ADHD Students	Moharari (2009)	Experimental	parental Constructive Program/8

Continued Table 1

Dependent variable	Instrument	sample/Type of Sample	Age
1. Social Skills	Attention Deficit Hyperactivity Disorder scale	20/Random sampling	7-11
2. Symptoms of attention deficit/ hyperactivity	DSM-IV-TR and Children Pathological Symptoms	40/ Random sampling	9
3. self-perception	CSI-4	40/ random sample size	9-11
4. Attention	DSM-IV, clinical interview	30/Random cluster sampling	5-6
5. Behavioral Disorder	DSM-IV-TR	26/Random sampling	5-8
6. Reduction Symptoms of Attention Deficit and Hyperactivity	DSM-IV ADHD Symptom on the ADHD Checklist and clinical interview	40/ Random selection sampling	7-12
7. Reading symptoms of Attention Deficit/Hyperactivity Disorder	CPRS-48 & DSM-IV-TR	16/Purposive selection	7-12
8. Reducing ADHD	CSI-4	160/ Multi-Stage Random Sampling	8-12
9. Positive Parenting Program/8	General Health Questionnaire	20/Random Sampling	4-12
10. Behavioral Disorders	CPRS-48	54/ Random Sampling	4-10
11. Behavior Disorder	CPRS-48 and Strengths and Difficulties Questionnaire	60/ Random Sampling	6-12

Final Selection Aria

Finally, eleven articles were identified in this study. These articles had to meet each of the subsequent aria: The article must have been an original investigate report (experimental, quasi-experimental research), included treatment of at least one independent variable; the students must have been recognized as having ADHD. Articles were excluded if they did not meet the above aria (n = 10), if the students IQs were below 90, or if data for the ADHD students could not be separated from group data that included other students without ADHD (n = 10). A total of eleven articles was screened for inclusion in this meta-analysis.

Procedure

According to Mooney et al (25) the researcher employed coding procedure. A coding structure, complete with operational definitions, was made to record quantitative information from each of the eleven studies. The following areas were employed for coding purposes. In this study, the research design was classified as experimental, and quasi-experimental. The specific kind of design was recorded (e.g., pretest or posttest).

Treatment Type

Treatment type was divided into 9 categories:

1. Preparation training treatments were categorized as either a content area preparation or a self-regulation preparation.

2. Direct training treatments included teacher led, explicit, and systematic training.

3. Behavioral treatments included treatments where the employ of positive reinforcement was dependent on successful completion of an assignment.

4. Practically treatments contained treatments where the children candidate in reiterative performance of an ability that was supposed to be already within the student's repertoire for example, student stay 20 minutes for reading task.

5. Textbook modification included any treatments that modified an original textbook to decrease its stage of difficulty.

6. Combination treatments included the employ of two or more of the treatments.

8. Pharmacy treatment such as Ritalin, methylphenidate and dextroamphetamine.

9. Finally, included any intervention that did not fit in the categories above such as parental treatment, cognitive treatment and cognitive-behavioral treatment.

3. Results

In this study, the researcher employed eleven ADHD studies retrieved from the internet. The characteristics of each study are detailed in Table 1. These studies were conducted in Iran.

To facilitate statistical analysis used continuous means one part of unmatched group post data from

Comprehensive Meta- Analysis software, the results are separated into three parts:

(2) Mean (b) standard deviation and (c) sample size for each group. To test treatment the results from experimental and control group participants differed, effect size between the full samples of each was calculated. Significance testing was performed. Means, standard deviations, Cohen's d, and we are described in Table 2. This organization of results indicated that mean difference between the experimental and control groups. The overall meta-analysis of these studies illustrated a statistically significant (see Figures 1 and 2), overall standardized differences in means are: -.343, 95% confidence interval [CI]: -.555, -.131, and Z-Value = -3.170, was statistically significant ($p < .000$). As well as the Q statistic for heterogeneity of 230.246 is statistically significant ($p < .000$), in addition, $I^2 =$

95.667, $T^2 = 3.038$, $SE = 1.725$, $s^2 = 2.977$ and $Tau = 1.743$.

Also in this study, Table 2 indicated that symptom of attention deficit hyperactivity disorder is reduced in the experimental groups than control groups, based this table, posttest means for eight studies in the experimental groups lower than the posttest mean for control groups. In addition, weighted averaged of -.49 and unweighted d of -.52 obtained in equation 1 and 2.

$$2) d_{\text{average}} = \frac{\sum d}{n}$$

$$d_{\text{average}} = \frac{-5.41}{11} = -.49$$

$$2) \bar{d} = \frac{\sum wd}{\sum w}$$

$$\bar{d} = \frac{-61.032}{117.67} = -.52$$

Table 2. Pretest mean, standard deviation for eleven ADHD studies in Iran

Study	Pretest			
	Experimental		Control	
	M	SD	M	SD
1. Bah-Pajooch (2007)	23.5	3.92	24.2	3.67
2. Jafari (2011)	5.18	3.55	9.48	2.62
3. Moradi (2010)	24.67	2.13	24.1	3.33
4. Salehi (2011)	18.73	4.16	18.73	3.35
5. Houshvar (2009)	69.25	6.25	66.20	8.09
6. Shooshtari (2011)	15.98	5.28	16.29	3.67
7. Dehghan (2010)	71.69	3.44	72.58	4.40
8. Moharari (2009)	9.67	3.54	9.69	2.48
9. Saheban (2008)	35.10	2.79	35.25	2.01
10. Yaghubi (2007)	110.67	3.04	106.75	5.17
11. Hadianfard (2000)	11. 127.57	1.31	132.02	1.82

Continued Table 2

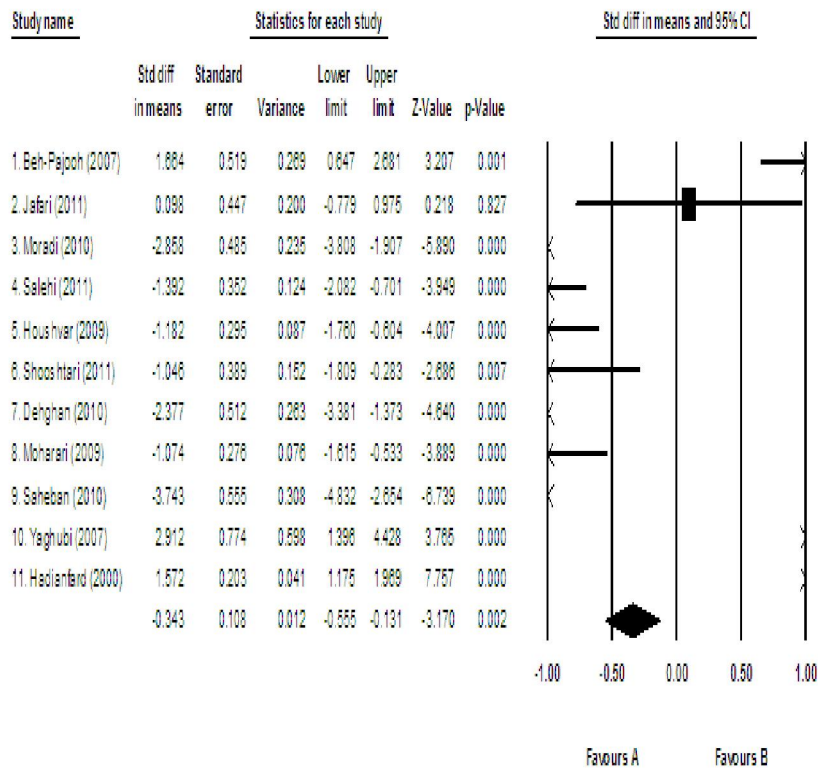
Posttest mean, standard deviation for eleven ADHD studies in Iran

Study	Posttest			
	Experimental		Control	
	M	SD	M	SD
1. Bah-Pajooch (2007)	29.4	3.20	23.3	4.08
2. Jafari (2011)	9.78	3.46	9.48	2.62
3. Moradi (2010)	18.76	2.14	24.5	1.51
4. Salehi (2011)	14.65	2.44	19.67	4.48
5. Houshvar (2009)	44.55	7.12	54.68	9.81
6. Shooshtari (2011)	10.74	4.26	14.61	3.04
7. Dehghan (2010)	54.92	4.53	67.80	6.18
8. Moharari (2009)	6.86	2.80	9.46	1.97
9. Saheban (2008)	27.85	1.75	34.10	1.38
10. Yaghubi (2007)	117.42	3.13	109.25	5.26
11. Hadianfard (2000)	136.7	1.85	133.80	1.83

Continued Table 2
Cohen's d and weighting for eleven ADHD studies in Iran

Study	d	w
1. Bah-Pajooch (2007)	.73	4.69
2. Jafari (2011)	-.75	4.67
3. Moradi (2010)	-1.13	8.62
4. Salehi (2011)	-.70	9.42
5. Houshvar (2009)	-.45	13.17
6. Shooshtari (2011)	-.52	7.04
7. Dehghan (2010)	-1.48	5.48
8. Moharari (2009)	-.49	14.13
9. Saheban (2008)	-1.62	8.32
10. Yaghubi (2007)	1.46	3.16
11. Hadianfard (2000)	-.46	38.97

Meta Analysis



Meta Analysis

Figure 1. Show that forest plot of eleven ADHD studies in Iran. This figure illustrated that, the summary data of standardized differences in means the fixed-effect model. The standardized differences in means is -0.343 and the 95% confidence interval is -0.555 to -0.131 and $p = .002$.

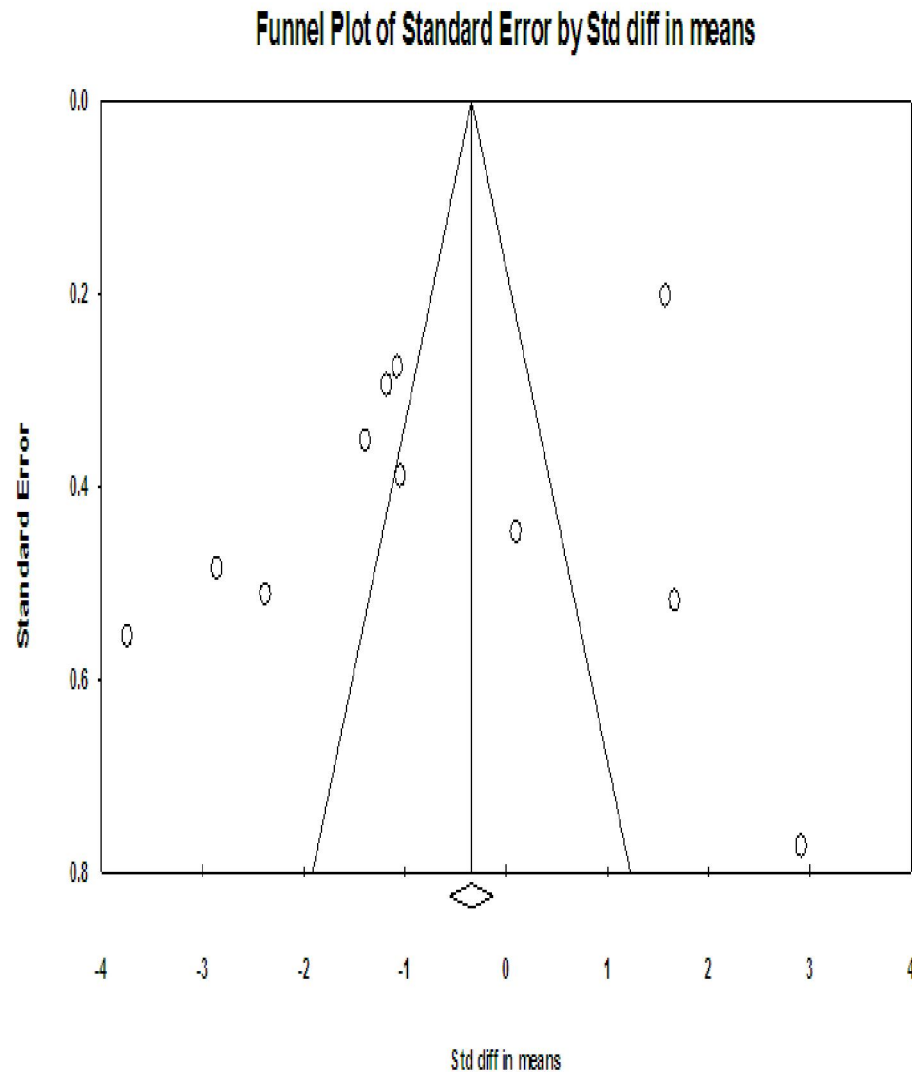


Figure 2. Show that funnel plot of eleven ADHD studies in Iran. A horizontal line represents the primary standardized differences in means for each study, and the vertical lines represent the standard error where available.

4. Discussion

This meta-analysis of eleven independent studies examining treatment programs on ADHD students. These studies show that treatment programs are successful and statistically significant, large mean effect sizes were found for self-control treatment ($d=.73$), positive parenting program ($d=-.75$), self-regulation treatment ($d= -1.13$), cognitive-behavioral treatment ($d= - .70$), group parenting program ($d= - .45$), play treatment ($d= -.52$), motor-perceptual rehearsal program ($d= -1.48$), parental constructive program ($d= -.49$), executive functions ($d= -1.62$), combination treatment ($d= 1.46$) and verbal self-training program ($d= -.46$). The difference between

overall mean change for treatment and control groups ranged from $-.45$ to -1.62 , showing that the groups receiving treatment programs illustrated significantly larger improvements attention deficit hyperactivities disorder. Consistent evidence from both experimental and quasi-experimental studies suggests that treatment program had desirable effects for the majority of ADHD studies (4; 5; 26; 27). Effective treatment programs for ADHD students will be those that social abilities, academic skills, reduce behavior disorders that reason destruction in daily life functioning, and educated parents and others charged with the child's heed to cope with the challenges that accompany an ADHD diagnosis over the course of achievement.

Consequently, improvements in daily life functioning and decreasing functional disorders are the important, socially suitable standards against which treatment result must be evaluated. The majority of studies about effective treatment program on attention deficit hyperactivity disorders in Iran, illustrated that, treatments programs are effectiveness on attention deficit hyperactivity disorders (13-24). Finally, all treatment programs that are used in Iran included; cognitive treatment, cognitive- behavioral treatment, behavioral treatment, pharmacological treatment and combinational treatment.

Conclusion

Previous studies show that the students who received treatment programs have a better situation on social abilities and academic skills than students who did not receive treatment programs. The findings of this study suggest that employing treatment program for ADHD students, because students who received treatment programs performed well by having social abilities and reducing problems with academic skills. Finally, it is important to consider, the reduced attention deficit hyperactivity disorder when they are receiving the treatment program.

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