



## Comparison of the effectiveness of conjoint behavioral counseling model and the application of parent-child relationship-based on games on the sleep quality of students with attention deficit/hyperactivity disorder

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### ARTICLE INFORMATION

#### Article type

Original research

Pages: 98-105

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#### Article history:

Received: 2023/05/06

Revised: 2023/07/12

Accepted: 2023/07/28

Published online:  
2023/11/02

#### Keywords:

conjoint behavioral counseling model, parent-child relationship training based on games, sleep quality, attention deficit/hyperactivity disorder.

### ABSTRACT

**Background and Aim:** Sleep problems in children with attention deficit/hyperactivity disorder are a significant challenge for parents and teachers. The purpose of this study was to compare the effectiveness of parent training based on the Conjoint Behavioral Counselling (CBC) model and the application of parent-child relationship training based on games (CPRT) on the sleep quality in students with attention deficit/hyperactivity disorder. **Methods:** The research method was a semi-experimental type with a pre-test-post-test design with a control group. For this purpose, a semi-structured interview was taken from the volunteer parents of students referred to the Roozbeh Mandegar Tehran counseling center with the aim of having physical health, not receiving treatment, not taking medication by the child, and not receiving counseling in the field of parenting from other counseling centers. In order to diagnose attention deficit/hyperactivity disorder, CSI4 children's symptoms questionnaire was used. The Pittsburgh Sleep Quality Index (PSQI) questionnaire was also administered. Among those whose children had attention deficit/hyperactivity disorder and also had poor sleep quality, 45 people were selected to participate in the research and were randomly divided into groups of 15 people as two experimental groups and one control group. The experimental groups were trained every week for 1 hour for 10 weeks, while the control group did not receive any training. For data analysis, statistical test of mixed analysis of variance and SPSS-23 software were used. **Results:** The results showed that the quality of sleep has increased in both groups, but there was a significant difference in the comparison of the effectiveness of the two groups ( $p < 0.05$ ) and the CBC pattern was more effective, and in the four-month follow-up, it was found that CPRT is more durable. **Conclusion:** The findings of this research showed that both methods can be used to increase the sleep quality of students with ADHD.



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#### How to Cite This Article:

Tabrizi, A., Tabrizi, M., & Estaki, M. (2023). Comparison of the effectiveness of conjoint behavioral counseling model and the application of parent-child relationship-based on games on the sleep quality of students with attention deficit/hyperactivity disorder. *Jayps*, 4(8): 98-105.

## Introduction

Attention Deficit/Hyperactivity Disorder is a disorder that is usually diagnosed in childhood, but in many cases it continues into adulthood; Attention-deficit/hyperactivity disorder occurs along with three types of behavioral disorders: inattention, hyperactivity, and impulsivity (Abbaslu, 2020). This disorder affects the academic, social, behavioral and emotional functions of these children; Also, if this disorder remains unknown and there is no proper and timely therapeutic intervention, adverse consequences such as academic failure, rejection by peers and lack of self-esteem will occur in affected people (Lai & Lee, 2012). The relationship between sleep and attention deficit hyperactivity disorder is complex and can be a vicious cycle. Hyperactivity can lead to sleep problems and lack of sleep can aggravate the symptoms of hyperactivity. Sleep problems in people with attention deficit/hyperactivity disorder are frequent and documented and affect their social, emotional and academic performance (Reynolds et al., 2017). Sleep problems in children and adolescents with attention deficit/hyperactivity disorder are a significant challenge for parents and teachers and increase the symptoms of the disease during the day. The sleep problems of these people cause an increase in the severity of the symptoms of the disease, a decrease in the quality of sleep and daily performance, and a decrease in memory and impaired mental concentration. As a result, it leaves unfortunate and irreparable effects on the educational status of children and their relationship with parents and other peers. On the other hand, when children sleep less than usual, parents are also awake with the child, and as a result, the impact of children's sleep problems on parents' sleep leads to parents' daily fatigue, mood disorders and reduced parenting efficiency; Also, due to the frequency of behavioral problems, these children and their parents endure more parenting stress than the parents of normal children (Mehri et al., 2016).

Children suffering from this disorder or lack of self-confidence face anxiety, depression, and issues related to communication with peers, and it has a deep impact on the lives of children and their families (Yang, 2013). The most prominent factor in the emergence of emotional and behavioral problems in children is the family environment; This has a significant

contribution in causing children to have internalizing and externalizing disorders (Khanjani & Hadavandkhani, 2013).

One of the educational programs for parents is the group program related to the child's school program. In this program, families receive the required information together, and the family's group communication with each other provides them with the possibility of psychological and emotional support. The programs provided are aligned and complementary with the home and school programs of the child (Khodabakhshi Kolayi, 2012). One of the new training programs for parents and teachers is the Common Behavioral Consultation (CBC) model. This program is focused on school and family partnership to improve children's experiences and productivity, including academic, social, emotional (emotional) and behavioral productivity. This model is based on family-centered principles, but it also identifies the strengths, values, goals, and priorities of educators like the family; Therefore, home and school priorities are central to participation rather than home or school priorities alone (Sheridan et al., 2017).

By using the model of joint behavioral consultation between parents and educators, it is possible to simultaneously enter the two systems of the family and the school as the most important systems involved in raising a child, and intervene, naturally, such an intervention will be more effective than single-system interventions. The joint behavioral consultation model brings together family members and educators to use complementary interventions and increase the chance of detecting these conflicts and side effects and reduce the possibility that these effects will cause children's behavioral problems. It can improve children's performance by increasing home-school integration (Kashani Nesab, 2015). It helps parents and teachers to attend counseling sessions with the counselor and examine and evaluate the child's issues and problems and decide on the appropriate solution with each other's help. This joint cooperation will make parents and educators interact with the child both at home and in the educational environment and indirectly lead to the prevention or treatment of the child (Sheridan et al., 2017).

In the collaborative behavioral counseling model, the counselor leads sessions in which

parents and teachers discuss the student's problems, collect primary data and information, design a therapeutic intervention, and apply therapeutic interventions. (Kalyrimik, 2013). Although not much research has been done on the sleep quality of children with ADHD, but in several studies, this treatment method has had a great impact on children in other areas. Wells (2014) investigated the effectiveness of this model on 1) the role of teachers, 2) school-home partnership, and 3) the relationship that these two factors have on children's challenging behaviors. He showed that the intervention package is effective on the subjects' behaviors at school and at home and has seen significant changes. Moorman-Kim, Sheridan, Kahn and Wood (2012) examined the effectiveness of the collaborative behavior consultation model and the role of teacher-parent relationships. In this study, joint behavioral consultation was considered as an effective, structured and indirect model through which teachers and parents jointly cooperated in the problem solving process and achieved more stable behavioral achievements for children. Kashani Nesab (2015) showed that training based on Adlerian approaches and joint behavioral counseling model can be used to reduce internalizing and externalizing symptoms.

When verbal language is not enough to express children's thoughts and feelings, therapists use play therapy to help children with something that upsets them (Bakhshaish & Mirhosseini, 2014). The descriptive dictionary of the American Psychological Association (2012) defines play therapy as follows: "Using activities and toys (such as pottery, water, cubes, dolls, etc.) in child psychotherapy". The game connects the child's inner thoughts with the outside world and makes the child be able to He brought the foreign under his control. The game allows the child to show the experiences, thoughts and feelings that are threatening to him (Khazaei et al., 2019). Today, researchers consider play therapy as a form of therapy that fits the child's growth and development. Group interventions based on parent-child relationships are focused on improving the parent-child relationship through play and are based on the assumption that improving this relationship improves the child's behavioral and emotional problems and guarantees the mental health of the parent and child. Therefore, Landert

introduced a special method of parent training called CPRT. According to this treatment manual introduced by Landert and Bratton, parents as therapists instead of counselors learn in therapy sessions how to create a warm and intimate environment at home and establish a non-judgmental and unconditional relationship with their child. In this way, they create a sense of safety in their children. The use of these skills by parents in playing with children causes the development of children's internal control source. One of the special aspects of the treatment is to change the child's perception of the parents and the parent-child relationship instead of emphasizing the change of the child's behavior (Najati et al., 2016).

During the efforts that have been made, various methods have been prepared for teaching behavior management to parents. All these treatments are similar to each other in terms of proposed techniques and theoretical dimensions and have good research support and empirical support, but "Parent-Child Interaction Therapy" has features that distinguish it from other similar programs. Among these cases, first of all, we can mention the focus of treatment on strengthening the parent-child relationship through the use of play therapy (Kazdin, 2011). Although not much research has been done in the field of sleep quality of children with ADHD, but the use of this intervention has been very effective in other fields. Tahmasabi and Khosropour (2019) concluded that the treatment based on the child's parent relationship was effective on children's social skills and cognitive regulation of emotion. Abbaslu (2020) showed that teaching CPRT to mothers can reduce children's behavioral problems in general, two more specific areas of these problems, i.e. internalized and externalized problems, and also at a significant level. In the research of Opiola and Bratton (2018) titled the effectiveness of child-parent relationship in families with adopted children, it was shown that play therapy training based on child-parent relationships can reduce children's behavioral problems and abnormalities.

Unfortunately, many children in our country are suffering from emotional and behavioral problems. Sleep problems are also serious issues in some families, especially families with children with attention deficit/hyperactivity disorder. Therefore, in order to prevent and treat

children's behavioral problems, the need to use the necessary skills to deal with children as best as possible and also to project them in order to raise healthy children is felt more and more day by day. Therefore, according to what has been mentioned, the purpose of the present study is to compare the effectiveness of CBC and CPRT on sleep quality in students with attention deficit/hyperactivity disorder.

### Method

The current research is of a semi-experimental type with a pre-test-post-test design with a control group and a follow-up stage, and it is aimed at studying the effect of the independent variable (with two levels: the use of games based on the parent-child relationship and the joint behavioral counseling model) on the quality of sleep (to title of the dependent variable) was discussed. The statistical population includes mothers with primary school-aged children and with hyperactivity/attention deficit syndrome with poor sleep quality, who had referred to Tehran's Rozbeh Mandage counseling center. The sampling method was available and voluntary. In this way, among the clients of the center, from the parents of the students who volunteered to participate in the research, a questionnaire of children's symptoms was first used to diagnose attention deficit/hyperactivity disorder. Then, the Pittsburgh Sleep Quality Index (PSQI) questionnaire was applied to the participants who had the symptoms of this disorder. Then, among these people, those who met the inclusion criteria of this study and their sleep quality was bad, 45 people were selected and randomly divided into two experimental groups and one control group. (15 people in the experimental group of CBC, 15 people in the experimental group of CPRT and 15 people in the control group). Other inclusion criteria in this research include having physical health, not being treated, not taking medicine by the child, and not receiving counseling in the field of parenting from other counseling centers. These cases were investigated in detail by a semi-structured interview.

### Materials

**1. Children Symptoms Inventory CSI-4:** It has 97 questions and was first designed by Sprafkin and Gallo to screen behavioral and

emotional disorders in children aged 5 to 12 years. In this research, the parent form was used in order to screen and investigate co-occurring disorders. In 1996, Tavaklizadeh obtained 90% validity of the parent form questionnaire (Sohrabi, 2012).

**2. Pittsburgh Sleep Quality Index Questionnaire:** This questionnaire was created in 1989 by Buysse and his colleagues and obtained the internal consistency of the questionnaire using Cronbach's alpha of 0.83. It has 9 items, but since question 5 contains 10 sub-items, the whole questionnaire has 19 items. The Persian version of this questionnaire was examined by Farhi et al. in 2012 and the Cronbach's alpha coefficient equal to 0.77 was obtained (Farhi, 2012).

### Implementation

The experimental groups were trained online for 10 one-hour sessions, while the control group did not receive any training. In the first group, parents, coaches and school teachers were also invited to the training. After the sessions, all three groups were examined with the Pittsburgh sleep quality index questionnaire as a post-test to measure the sleep quality of their children. Also, four months after the completion of the research, this test was repeated to follow up the research.

### Results

Demographic findings indicated that the highest frequency of age in the CPRT test group was 5-6 years old, and in the CBC test group and the control group, it was 7-8 years old. Also, with a very small difference, boys had the highest frequency (23 people) compared to girls. Also, the highest frequency regarding the type of school was the studied groups with 38 people studying in non-government schools. Also, most of the studied groups with 41 subjects lived in normal families (without divorce). Also, the skewness and elongation indices of the studied variables, which are common criteria in examining the assumption of normality, were examined and it indicates no significant deviation from the assumption of a normal curve. Descriptive indicators of sleep quality variables based on pre-test, post-test and follow-up and in two test groups CPRT, CBC and control group are reported in Table 1.

Table 1. Descriptive indicators of sleep quality variables in pre-test, post-test and follow-up

Stage - Variable	Group	N	Mean	SD
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<b>Pre-test - sleep quality</b>	CPRT	15	7.266	1.162
	CBC	15	7.066	.798
	Control	15	6.600	.828
	Total	30	6.977	.965
<b>Post-test - sleep quality</b>	CPRT	15	3.866	1.125
	CBC	15	2.800	1.207
	Control	15	6.066	.961
	Total	30	4.244	1.744
<b>Follow-up - sleep quality</b>	CPRT	15	3.866	.915
	CBC	15	2.133	.833
	Control	15	4.666	.816
	Total	30	3.556	1.357

Table No. 1 shows the improvement of sleep quality in both test groups compared to the control group in post-test and follow-up. Before conducting the analysis, to ensure that the data of this research meets the underlying assumptions of the mixed analysis of variance, the assumptions have been checked. The results of the Shapiro-Wilk test to check the normality of the sleep quality variable in three times and two experimental groups and one control group showed that the assumption of normality or parametric data was met ( $p > 0.05$ ). The assumption of homogeneity of variances in the sleep quality variable has also been met ( $p > 0.05$ ). The assumption of homogeneity of variance-covariance matrix between groups based on M-box results, the condition of

homogeneity of variance-covariance matrix of dependent variable (sleep quality) also applies at different levels of independent variables ( $p > 0.05$ ). Also, the findings showed that there is a significant difference in the variable size of sleep quality, both in time (pre-test, post-test and follow-up) and in the time interaction between the groups ( $p < 0.01$ ); Therefore, there is a necessary condition to perform mixed variance analysis. Regarding the intragroup interaction effect between time and the three experimental and control groups, there is also significance; Therefore, the changes can be explained by the interaction between the time levels and the group. Therefore, we can check the paired averages with the Bonferroni test, which can be seen in Table 2 of the results.

Table 2. The results of examining the within-group means

Groups	Stage (I)	(J)	Mean diff (I-J)	SE	p
<b>CPRT</b>	Pre-test	Post-test	3.400*	.235	.000
		Follow-up	3.400*	.273	.000
	Post-test	Pre-test	-3.400*	.235	.000
		Follow-up	.212	.239	1.000
	Follow-up	Pre-test	-3.400*	.273	.000
		Post-test	.212	.239	1.000
<b>CBC</b>	Pre-test	Post-test	4.267*	.345	.000
		Follow-up	4.933*	.267	.000
	Post-test	Pre-test	-4.267*	.345	.000
		Follow-up	.667*	.232	.037
	Follow-up	Pre-test	-4.933*	.267	.000
		Post-test	-.667*	.232	.037
<b>Control</b>	Pre-test	Post-test	1.267	.345	.435
		Follow-up	.933	.267	.152
	Post-test	Pre-test	-1.267	.345	.435
		Follow-up	.567	.232	.137
	Follow-up	Pre-test	-.933	.267	.152
		Post-test	-.567	.232	.137



According to Table 2, in both CBC and CPRT training groups, there is a significant difference between the pre-test and post-test scores in terms of the variable score of sleep quality, which shows the effectiveness of both methods. Also, no significant difference can be observed between the post-test and follow-up scores in the CPRT group, which means the stability of the intervention effect, while in the CBC group, there was a decrease of almost one score in the follow-up, which shows the lack of stability of the intervention effect. In the following, the control group was also examined, and the results show that there is no significant difference between the pre-test, post-test and

follow-up scores in terms of sleep quality variable.

Also, the effects between groups were compared and it showed that the type of treatment had an effect on the sleep quality of the studied group. Considering the significance of the difference between the groups, the mean was compared. Since the sample sizes in the three studied groups were equal and the assumption of homogeneity of variances also applied, Tukey's post hoc test was used to compare sleep quality among the groups. The results of comparing the means between the groups are reported in Table 3.

**Table 3. Comparison of the mean variable of sleep quality in the studied groups**

Group (I)	Group (J)	Mean diff (I-J)	SE	P
CPRT	CBC	1.000*	.284	.003
	Control	-.778*	.284	.027
CBC	CPRT	-1.000*	.284	.003
	Control	-1.778*	.284	.000
Control	CPRT	.778*	.284	.027
	CBC	1.778*	.284	.000

The above table shows that there is a significant difference between the CPRT test groups and the CBC test group in the sleep quality variable ( $p < 0.05$ ) and in the CPRT test group, the sleep quality variable is about one score lower than the CBC test group. As a result, the quality of sleep in the pre-test is low in all three experimental and control groups, which shows an increase in the scores in the post-test in both experimental groups after the interventions. Although both intervention methods were effective on the sleep quality of the studied groups, the CPRT method was less effective than the CBC method on the variable of sleep quality.

### Conclusion

In the present study, the effectiveness of parent training based on joint behavioral consultation model and the application of parent-child relationship based games on the sleep quality of students with attention deficit/hyperactivity disorder was investigated. The final results showed that the treatment training based on the parent-child relationship has less effect on improving the quality of sleep compared to the implementation of the joint behavioral counseling model. However, both methods are effective and the degree of stability in teaching therapy based on parent-child relationship has

been higher than the joint behavioral counseling model. Little research has been done on the variable of sleep quality, and this has prompted the researcher to do research in this regard and effective methods to increase it. The results of this research were in line with the results of many studies, including the following: Topham et al. (2014); Sheridan et al. (2012), Moorman-Kim et al. (2012); Wales (2014); Opiola and Bratton (2018); Haj Rezaei (2014); Khodabakhshi Kolayi et al. (2014); Aghaei, Kalantari and Jamali (2014); Visani et al. (2015), Aghaei et al. (2016); Debir et al. (2018); Tahmasabi and Khosropour (2019); Heydari et al. (2019); Bahmani and Jahan Bakshi (2020); Abbaslu (2020) is consistent. Although these studies have not measured the effect of these variables on sleep quality, they have been effective on the effectiveness of two methods in reducing the problems of children with attention deficit/hyperactivity disorder.

So far, little research has been done on the sleep quality of children with ADHD, and at the same time, no research has investigated the difference between these two methods, and in this sense, this research has been a pioneer. However, the use of these two methods in other fields is very effective and the results of this research are in some ways aligned with this research. Debir et

al. (2018) concluded that teaching game skills to mothers by creating a sense of efficiency and self-confidence can strengthen the relationship between mother and child and provide the basis for reducing children's behavioral problems. Topham et al. (2014) showed that CPRT can reduce behavioral problems in children. Sheridan et al. (2012) showed the positive effectiveness of CBC in reducing problematic behaviors of students in a research. Bahmani and Jahan Bakhshi (2020) confirmed CPRT as an effective treatment method for improving parent-child interaction and reducing children's aggression.

In explaining these results, it can be said that considering that each student spends a lot of time in school, it is as if the child has other parents in the school, including the child's teachers, in addition to his two main parents. Just like teaching parents can have a great impact on children's peace, now imagine if the child has three parents instead of two main parents, which includes his two main parents and his teacher, and how much impact can be made by teaching all three. He observed more on his calmness and the continued increase in the quality of the child's sleep. Sometimes sleep problems are caused by the stress of the school and classroom environment and the interactions between the teacher and the student in the classroom environment, which can be improved by teaching the teacher the correct behavior. Therefore, teaching parents and teachers at the same time and with the same content can sometimes help increase the quality of the child's sleep more than just teaching the parents.

#### Conflict of Interest

According to the authors, this article has no financial sponsor or conflict of interest.

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