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The effectiveness of parent management training program on self-efficacy and parenting of ADHD children's parents

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Abstract

This study was experimental research which aimed to evaluate the effectiveness of parent management training program (PMT) for parents of children with attention deficit hyperactive disorder Attention-Deficit/ Hyperactivity Disorder (ADHD) ADHD) focusing on their self-efficacy, positive parenting patterns, and children's ADHD symptoms. Participants were 38 parents of 6-13-year-old children with ADHD diagnosed by psychiatrists at the Child and Adolescent Mental Health Rajanagarindra Institute. 19 Half of the parents (19) participated in 7 sessions of the PMT program as an experimental group, while the remaining 19 received regular services as a control group. Parenting Sense of Competence (PSOC), Positive Parenting Questionnaire (PPQ) and Thai ADHD Screening Scales (THASS) were used for the effectiveness of the program. The results showed that the PSOC total scores including self-efficacy domain of the experimental samples were significantly increased after finishing the program and continually elevated after 3 months (p-value = .05). Specifically, the scores of self-efficacy domain of the experimental samples after completing the program and 3 months post were significantly higher than those of the control group (p-value = .05, <.01). Moreover, the THASS scores of the experimental group (after the PMT) immediately and 3 months post were significantly lower than before the program (p-value = .05, < .001). In addition, The total score of PPQ in the experimental group was significantly higher than the control group (p-value = .05, .01). Parent management training program (PMT) was effective in increasing self-efficacy in parents of 6-13 year-old children with attention deficit hyperactive disorder (ADHD) after completing the program and 3 months post training.

Keywords:
ADHD, Parenting,
Parent management training,
Self-efficacy Structural equation modeling

Introduction

Attention-deficit hyperactivity disorder (ADHD) is a mental disorder which is commonly found in childhood and adolescence. It has an impact on a child's social-emotional development and learning abilities at home and school (Remschmidt, 2005). ADHD can be divided into 3 major symptoms which are inattention, hyperactivity, and impulsivity. Generally, the prevalence of ADHD has been 5-12%. It has been found mostly in boys (Hongsanguansri & Kiatrungrit, 2016). In Thailand, overall prevalence of ADHD was 8.1%. ADHD was found in 12% of boys and 4.2% of girls. This survey also found that students in Year 1 of a primary school tended to be diagnosed with ADHD more than others (Visanuyothin, Pavasuthipaisit, Wachiradilok, Arunruang, & Buranasuksakul, 2014). As a consequence, ADHD symptoms in school-aged children had an impact on learning and behavior problem in the classroom (Parekh, 2015). It also has some influence on the child's executive brain functions such as planning and prioritizing, which relate to learning outcome and homework (Mohammadi, Soleimani, Ahmadi, & Davoodi, 2016). Although it usually starts in childhood, there are 60-85% of children with ADHD continue through adolescence and 40-60% of them through adulthood (Barkley, Fischer, Smallish, & Fletcher, 2002; Spetie & Arnold, 2007). (check verb usage – starts, continue, through. Is the author meaning to say ADHD is usually present in childhood but for some it continues or ADHD is discovered at these different stages) A survey in the United State found that 33% of ADHD patients had one comorbidity, 16% had two comorbidities, and 18% had three or more comorbidities (Larson, Russ, Kahn, & Halfon, 2011). The most common comorbidities of ADHD were oppositional defiant disorder, conduct disorder and learning disorder (Hongsanguansri & Kiatrungrit, 2016).

If children with ADHD do not receive appropriate and continuous treatment, there will be severely negative impact not only on the child themselves but also his or her family (Pornnoppadol, n.d.). When the child has grown up with learning and behavior problems together with repeated punishment, he might become experience low self-esteem and social isolation. In some cases, it can develop to be a more serious behavior problems in adolescence and adulthood such as delinquency and antisocial behaviors. Moreover, some turn into illegal behaviors e.g. burglary, assault, drug addiction which have an effect on social and community level (Puraya, 2011; Boon-yasidhi, 2012). In addition, families of ADHD children can have long-term conflicts (Sethi, Gandhi, & Anand, 2012 ; Kamlhang, 2009 ; Wells, 2007). In order to take care of the ADHD child, the parents play important roles in providing clinical seeking clinical? treatment, discipline, education, and future career (Klongdee, 2016). As a result, some parents might feel burdensome which will lead to a negative relationship in the family (Wells et al., 2000). Some parents fail to manage the child behaviors and use some negative manners such as ordering, repeated complaining or quarreling (Kamlhang, 2009). Furthermore, some parents fail to notice the child's good behaviors and do not use positive reinforcement to maintain those behaviors (Wells, 2007). Besides Additonally, some parents might continually blame each other which will become a cause of divorce (Pornnoppadol, n.d.). In 2003, the American Academy of Pediatrics recommended that a good practice for ADHD treatment was to work together with the child and the parents (Harpin, 2005). Up till now, medication along with behavior therapy is the most effective way to treat moderate to severe ADHD patients (Hongsanguansri & Kiatrungrit, 2016; Parekh, 2015). Parent Management Training (PMT) is a psycho-social treatment which is helpful for the parents of the ADHD to reduce parental stress and to increase parenting self-efficacy (Colalillo & Johnston, 2016). The PMT is based on behavior therapy and learning theory which consists of positive reinforcement, modeling and role playing. The parent will be able to practice some essential parenting skills including encouragement, monitoring, discipline and problem solving (Martinez Jr & Eddy, 2005). The goal of the PMT is to encourage satisfied satisfactory behaviors and eliminate problematic behaviors of the child (Kazdin, 1997). The research found that the PMT can significantly reduce the child's behavior problems as well as increase parents' well-being (Colalillo & Johnston, 2016).

Child and Adolescent Mental Health

Rajanagarindra Institute (CAMRI), the Department of Mental Health in Thailand, has provided mental health services for children and adolescents under 20 years old. ADHD was the majority of patients in the CAMRI . From 2013 to 2016, the amounts of the ADHD patients were 981, 892, 911, and 773, respectively (Child and Adolescent Mental Health Rajanagarindra Institute, 2017). Apart from diagnosis and medical treatment by child and adolescent psychiatrists, the clinic also offers some psychosocial treatments done by multidisciplinary team including psychoeducation, family counseling, school conference and group psychoeducation. However, there was no parent management training for behavior modification available in this clinic. Therefore, this study aimed to examine effectiveness of the PMT on parents of children with ADHD at the CAMRI.

Objectives

This study aimed to examine effectiveness of PMT program on parents with ADHD children.

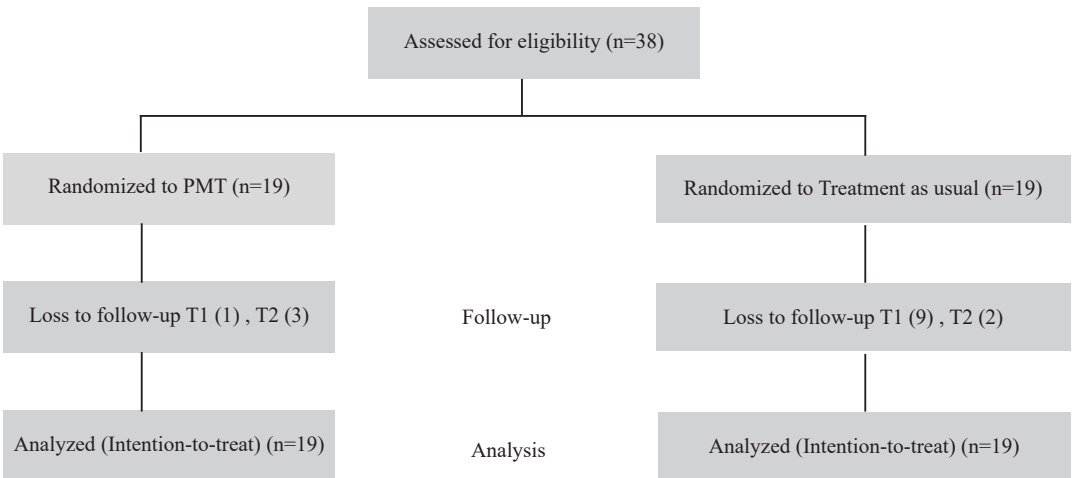

Figure 1: The consolidated Standards of Reporting Trials (CONSORT)

Methods

Population and samples

This study was experimental research. Populations were parents of 6 – 13 year-old children who were diagnosed and treated for ADHD (Attention-deficit hyperactivity disorder) by the child and adolescent psychiatrists at the CAMRI from January 2016 to October 2017. Medication treatment for the child needed to be stable. Samples were divided into 2 groups which were an experimental and a control group by using a simple random sampling technique for randomized case-control trial (RCT). the sample size was calculated by formula for sample size ($n = \frac{(Z_{1-\frac{\alpha}{2}} + Z_{1-\beta})^2 \sigma^2}{\Delta^2}$), referring past of research with the same program, An outcome evaluation of the implementation of the Triple-P Positive Parenting Program in Hong Kong (Leung, Sanders, Leung, Mak, & Lau, 2003). That study found that means of self-efficacy scores of the participants on pre-test was 53.91 (SD. = 8.56) and on post-test was 60.45 (SD.=8.7). As a result, this study required a sample size of 19.

Inclusion criteria

Inclusion criteria was consisted of 1. being a parent or a caretaker of an 6-13 year-old child 2. the child was diagnosed by a child and adolescent psychiatrist as having ADHD 3. the child was a patient of the CAMRI 4. first visit at the CAMRI would be around January

2016 to October 2017 and 5. medication treatment was stable.

Research Tools

Tools using in this study could be divided into two categories which were tools for research intervention and tools for data collection.

Tools for research intervention

• Parent management training program (PMT) used in this study was developed by the Child and Adolescent Psychiatry Program, Department of Psychiatry, Faculty of Medicine, Siriraj Hospital, Mahidol University. The program contained 7 sessions for 21 hours in total which consisted of basic principles of child behavioral management, basic communication skills, praise, reward, punishment, point system and token economy techniques, and integration and application. Each session was conducted for 3 hours once a week which included the parents completing homework during the week.

• Qualifications of group leaders and a researcher were all certified by the PMT training course organized by the Child and Adolescent Psychiatry Program, Department of Psychiatry, Faculty of Medicine, Siriraj Hospital, Mahidol University.

Tools for data collection

• General questionnaire could be divided into two parts as follow part 1 information of the parent/ caretaker: gender, age, education, marital status, income, health status, and relationship with the child part 2 information of the child: gender, age, current educational level, and duration of treatment of ADHD.

• Thai ADHD Screening Scales (THASS) was developed by Chanvit Pornnoppadol (Pornnopadol, Piyasilp, Jittorn, & Chanpen, 2014) . The THASS had good psychometric properties with Cronbach's alpha coefficient of 0.94-0.98 and Pearson's correlation coefficient of 0.80-0.91 (Means was 0.86, $p<.001$) at the cut-off point of T-score>61. The tool could be used for ADHD screening in children and adolescents between 3 to 18 years old. There were 3 versions of THASS – self-report, parent, and teacher – with 30 items each. Items of the test included 15 items for hyperactivity and impulsivity symptoms and 15 items for inattentiveness. For this study, the parent version was used which had good reliability and validity with a moderate level of sensitivity and specificity.

• Positive Parenting Questionnaire (PPQ) was developed by Chanvit Pornnoppadol (Pornnoppadol, Apinuntavech, Vasupunrajit, & Chanpen, n.d.) It was a parent's self-report questionnaire for examining parenting skills based on the basic principle of child-rearing and positive reinforcements. There were 16 rating-scale items of parenting behaviors: 0 = never; 1 = sometimes; and 2 = usually. Cronbach's alpha coefficient of the PPQ was 0.85.

• Parenting Sense of Competence (PSOC) was developed by Gibaud-Wallston and Wandermans (Gibaud-wallston, Wandersman, 1978) which was translated to Thai by Tatirat Suwansujarit (Suwansujarid, Vatanasomboon, Gaylord, & Lapvongwatana, 2013). Cronbach's alpha coefficient was 0.78. There were 17 items consisted of two domains which were 8 items of self-efficacy (item 1,6,7,8,10,11,13 and 15) and 9 items of satisfaction (item 2,3,4,5,9,12,14,16 and 17). Positive questions (items 1,6,7,10,11,13 and 15) were scored from 1 (strongly disagree) to 6 (strongly agree), while negative questions (item 2,3,4,5,8,9,12,14 and 16) were scored in reverse. The total score was between 17 to 102. The higher score, the higher sense of competence in parenting.

Data Collection

This study was approved by both Siriraj International Review Board, Faculty of Medicine Siriraj Hospital, Mahidol University and, an ethical committee of the CAMRI. Before staring the PMT program, participants were asked to complete the Positive Parenting Questionnaires. Next, the experimental group participated in the program once a week for seven times. Finally, the experimental and the control group were asked to complete questionnaires during the last session of the program and three months post.

Data analysis

• Descriptive statistics, which were percentage, means and standard deviation (SD), were used for analyzing general information of all participants.

• Means difference between scores of experiment group's participants before and after the program was calculated by using a non-parametric statistic which was Wilcoxon matched-pairs signed-ranks test.

• Means difference between scores of participants in the experiment group and those in the control group after the program was calculated by a non-parametric statistic which was Mann-Whitney U test.

Results

The results of this study could be divided into two parts as follow:

Part 1: General information

• Participants were 38 parents of ADHD children which were randomly divided into two groups, an experimental group and a control group, 19 people each. Most of them were female (31 women and 7 men) and were 40-49 years old. The highest academic levels of them were mainly the bachelor's degrees or lower (16 and 17 persons, respectively). Of all participants, 28 were married; 24 people were physically healthy; 27 people reported to have sufficient income; and 28 people were mothers of the ADHD children.

• According to the children's information, there were 33 boys and 5 girls. They were all studying in primary schools which 25 children were in Year 1-3 and 13 children were in Year 4-6. 29 children reported to take medication regularly.

Table 1 : Before and after of Parenting Sense of Competence in experimental groups

Parenting Sense Of Competence (PSOC)	Negative ranks			Positive ranks			Test statistics		
	n	Mean	Sum of ranks	n	Mean	Sum of ranks	Ties	*Z*	*p*
Total	6	5.00	30.00	11	11.18	123.00	2	*-2.209*	*.027**
-self-efficacy	2	9.00	8.00	16	9.56	153.00	1	*-2.952*	*.003***
- satisfaction	5	7.50	37.50	11	8.95	98.50	3	*-1.580*	*.114*

***P .05 **P.01**

Table 2: Before and after 3 months of Parenting Sense of Competence in experimental groups

Parenting Sense Of Competence (PSOC)	Negative ranks			Positive ranks			Test statistics		
	n	Mean	Sum of ranks	n	Mean	Sum of ranks	Ties	*Z*	*p*
Total	5	5.00	25.00	11	10.09	111.00	3	*-2.229*	*.026**
-self-efficacy	2	10	20	16	9.44	151	1	*-2.861*	*.004***
- satisfaction	8	9.19	73.50	10	9.75	97.50	1	*-.524*	*.600*

***P .05 **P.01**

Part 2: Research results

• Results from this study showed that the PMT program enhanced parenting self-efficacy of the participants in an experimental group. Scores of the PSOC's self-efficacy domain after finishing the program and after 3 months were significantly increased (p<.05). Also, those scores of the parents in the experimental group were significantly higher than the parents in a control group (p<.001). On the other hand, positive parenting scores before and after the program were not significantly different.

• The parents who joined the program reported that his/her child's ADHD symptoms scores were significantly lower after finishing the program (p<.05) and after three months (p<.001).

• Regarding the PSOC total scores and self-satis faction scores, those of the experiment group were not significantly different from those of the control group after finishing the program and after three months. Nonetheless, the self-efficacy scores of the experiment group were significantly different from those of the control group on both periods of time (p<.05 and p<.01 respectively). Additionally, positive parenting scores of the experiment group were significantly different from those of the control group on both periods of time (p<.05 and p<.01 respectively).

Table 3: Comparison of Parenting Sense of Competence between experimental and control groups

Parenting Sense Of Competence (PSOC)	Cont.Group		Exp.Group		*Z*	*p*
	Mean	S.D	Mean	S.D.		
Total score	68.05	8.80	72.47	8.05	-1.642	*.054*
Self-efficacy	35.10	5.72	38.47	2.91	-1.967	*.025**
Satisfaction	32.94	7.98	34.36	6.32	-.351	*.364*

*p .05

Table 4: Comparison of Parenting Sense of Competence between experimental and control groups after 3 months

Parenting Sense Of Competence (PSOC)	Cont.Group		Exp.Group		*Z*	*p*
	Mean	S.D	Mean	S.D.		
Total score	68.36	8.53	72.00	10.18	-.994	*.162*
Self-efficacy	35.15	5.57	39.15	3.32	-2.567	*.005**
Satisfaction	33.21	7.92	33.22	7.89	-.175	*.431*

*p < .01

4. After finishing the program, the experimental group's ADHD scores of their children were not significantly different from the control group. However, they were significantly different after three months (p.05)

Discussion

The results showed that the parents enhanced higher self-efficacy after attending the training program at a significance level of .01, and higher than that of the control group at a significance level of .05 and <.01 after completing the training and after a period of 3 months. This can be explained that promoting self-efficacy among the parents enables them to take care of and to have confidence in handling the behavior of their children with ADHD under better knowledge, understanding and skills. The Researcher has run the program by starting from Activity 1 so that the parents could understand the basic principles in child behavioral management by having 3 Rs in the family, starting from good Relationship, family Rules, and Resilient child. The Researcher has linked this formula with other skills throughout 7 training sessions . The parents participating in the program have been trained to have necessary skills for handling their children's behavior in different situations, and communicating with their children by giving praise and sensational reflected wording. The parents would learn more skills in Activity 6 reward and punishment through simple point system. That is, the Researcher compared this system with the credit card point system or stamp collection system of the convenience store to be exchanged with the reward required. This is the positive reinforcement to arouse the behavior (McLeod, 2007). Allowing the parents to practice every skill through activities made them have the direct experience. Perceiving that they were able to solve any problems from hypothetical situations helps increase their ability in looking into themselves, and believing in their ability. For this mastery experience, Bandura (Bandura, 1977) believes that this is the most efficient method in improving self-efficacy in individuals. Apart the parents, the Researcher and other participants had the direct interactions by sharing viewpoints with each other in the group. Sharing the learning experience causes the imitative behavior (Pornnoppadol, Rohitsuk, Hasdinrat, & Vasupanrajit, 2015), which is the principle of behavioral adjustment by the parent management training. This helps increase the parents' confidence that they are able to perform like other parents. This study is consistent with the study on Parent Training for Preschool ADHD in Routine, Specialist Care: A Randomized Controlled Trial (Lange et al., 2018), which examined the parents whose children had ADHD aged between 3-7 years. The result showed that, after the training program, self-efficacy scores of parents participating in it were significantly different from those not participating in it. This study is also consistent with the study on The Effectiveness of Parent Management Training to Increase Self-efficacy in Parents of Children with Asperger Syndrome (Sofronoff & Farbotko, 2002) which examined 89 parents whose children were diagnosed for Asperger, and they have attended the PMT program for 6 times. Psychoeducation was given to the parents through the example conversations, hypothetical situations, handling of unsatisfied unsatisfactory behavior, skill practice in the group and at home, the results showed that the children's behavioral problems decreased while the parents' self-efficacy increased in the follow-up period of 4 weeks and 3 months at a significance level of .05. This result is also consistent with the study on Mothers of Children with Disability: Sense of Parenting Competence and Parenting Stress Changes after participation in the intervention Program "Caregivers" Self-help and Competence (Geikina & Martinsone, 2015). This program allowed the parents to practice increase self-awareness, practice the skills in coping with stress, evaluate and change perception, have self-efficacy and increase self-confidence as the parents, look for their strength, and reduce their social isolation. The results showed that the parents had higher self-efficacy. Regarding the parents' scores of positive parenting after the end of the training program and after 3 months, the parents participating had the different positive parenting from those not participating at a significance level of .05 and .01. This could be explained that the parents participating in the program enhanced knowledge and awareness of the basic principles in child behavioral management

for 3 Rs (Pornnoppadol et al., 2015), that is, relationship + rules = resilient child since the first time of this program. The Researcher linked this principle to other skills up the end of this program. The Researcher also educated about how to positively respond to children's improper behavior (Limsuwan, 2017; Limsuwan, n.d.), which is the main principle of the PMT.

However, the positive parenting scores of the parents participating in the program after the immediate end of the program and after 3 months were not significantly different. This could be explained that, according to the training program structure with 7 activities for management of children's behavior, the contents focused on managing the behavioral problems, not the psychological aspect of child rearing (Limsuwan,2017; Limsuwan, n.d.), psychological needs, deep listing, and parents' rearing influencing the child's behavior and emotions (Baumrind, 1971). This knowledge is the psychological aspect of child rearing, which would make the parents understand and recognize the importance of different child rearing. This result is consistent with the study on Parent Training for Preschool ADHD in Routine, Specialist Care: A randomized Controlled Trial (Lange et al., 2018). The result showed that, after the program, the parents had no different child-rearing significantly. Regarding ADHD symptoms, after participating in the program, the parents compared children's ADHD symptoms lower than before the program at a significance level of .05, and, after 3 months from the end of the program, the parents compared children's ADHD symptoms lower than before the program at a significance level of <.001. This could be explained that the parents participating in the program understood the disorder and negative behavior that came from the disorder. Thus, the parents were able to handle those undesirable behaviors by using both positive and negative reinforcements appropriately. For example, in the activity of analyzing the blame and changing the blame to the words of encouragement when the child became distracted, "Pay attention. No wonder why you know nothing and do your homework incorrectly". The parents whose child has ADHD usually encounter his inattention. When they have to help the child with homework, the parents who understand and have better attitude towards such behaviors would be able to encourage their child. For example, "I notice that you have inattention, so I permit you to have a break and come back to do homework again". In addition, in Activity 2, the parents reconsidered their past wording from some example sentences the parents with ADHD children used to speak such as "People say that my child is stubborn", "Teacher told me that you are usually absent-minded in class" "You have grown up, but you have no responsibility". The parents would learn together that those behaviors came from children's symptoms. The negative wording affects the emotions. When understanding the symptoms, the parents' attitude toward ADHD changes. Wanrawee Pimratana (Pimratana, 2016) examined the relationship between the parents' knowledge and attitude and consistency of medicine-taking in children with ADHD. It could be said that the parents played a very important role in encouraging the children to receive the medical treatment. Knowledge and understanding of ADHD results to in the different attitude and understanding the ADHD. ADHD symptoms in this study are consistent with effectiveness of medication and combined medication and parent management training on visuo -constructive, attentional, behavioral and emotional indicators of children with attention deficit/ hyperactivity disorder (Fazeli, Shirazi, Farid, & Ebrahimi, 2014). The samples were 18 parents whose children have received the medical treatment for ADHD. The experimental group attended the program and received the medication while the control group received the medication only. After the experiment, it was found that the parents compared the ADHD symptoms in children lower than before the program at a significance level of .05. This result was consistent with the research study on A Comparison of Effectiveness of Parent Behavioral Management Training and Methylphenidate on Reduction of Symptoms of Attention Deficit Hyperactivity Disorder (Mohammadi et al., 2016), which examined the effectiveness of PBMT program. The samples involved 47 parents, divided into the parents participating in the program and obtaining Methylphenidate while the other group obtained Methylphenidate only. The parents have attended

the program twice a week for 2 hours per time for the total of 10 weeks. Based on the learning theory of Bandura, it was found that the parents attending the program evaluated ADHD symptoms lower than before the program significantly. This result was consistent with the research study on Mediators of Change in a Parent Training Program for Early ADHD Difficulties: The Role of Parental Strategies, Parental Self-efficacy, and Therapeutic Alliance (Rimestad, O'Toole, & Hougaard, 2020) which examined the parents of 64 children aged between 3-8 years, who have received the medical service due to their ADHD at The ADHD Medical Treatment Center at Aarhus, Denmark, along with their participation in the parent training program. The result showed that increasing the parental self-efficacy resulted to the reduction of ADHD symptoms and stubborn behaviors. When comparing the ADHD symptoms in children whose parents have attended the training program for behavioral management with those whose parents have not attended the program when the training program ended, there was no difference between both groups. However, after 3 months from the end of the program, the parents who have attended and those who have not attended the program evaluated the children's ADHD symptoms differently at a significance level of .05. This can be explained that the parents attending the program have had the appropriate child rearing, and managed the undesirable behaviors in children properly, which made children have better cooperation, and have less ADHD symptoms. In this training program, the Researcher raised certain situations and role-playing to the parents so that they could practice the skills relating to behaviors of children with ADHD. However, this result was different from the research study on Efficacy of Parent Management Training Program for ADHD (Makbunsri, 2007) which compared the differences of ADHD symptoms in the experimental group and the control group. The result showed that there was no difference at the .05 level of significance. In this study, it was observed that the training program focused on changing the parents' behavior in child rearing rather than children's ADHD symptoms.

Conclusion

Parent management training program (PMT) was effective in increased self-efficacy in parents of 6-13 year-old children with attention deficit hyperactive disorder (ADHD) after completing the program and 3 months post.

Recommendations

Based on the results of this study, the positive parenting scores of the experimental group's parents remained unchanged. The training program should educate the parents about the psychological aspect of child rearing, and psychological needs along with training the parents in child rearing.

Limitations of this study

The samples of this study were limited to the parents of 6-13-year-old ADHD patients of the CAMRI. Therefore, the results could not be implied for other populations.

Ethics approval and consent to participate

This research has been ethically approved by the Ethics Research Committee of Siriraj Institutional Review Board according to document number Si 495/2017 and approved by the Ethics Research Committee of Child and Adolescent Mental Health Rajanagarindra Institute according to document number CAMRI-IRB-2561-001

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