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Original Article

The Effectiveness of Acceptance and Commitment Therapy for Children with Chronic Pain on the Function of 7 to 12 Year-Old

*Soheila Ghomian[1], Mohammad Reza Shairi[2]

[1]Faculty of Humanities, Shahed University, Tehran, Iran.
[2]Associate Professor of Clinical Psychology, Faculty of Humanities, Shahed University, Tehran, Iran.

Abstract

Introduction:
The aim of this study is to evaluate the effect of Acceptance and Commitment Therapy for Children with Chronic Pain on the function of 7 to 12 year-old children. Thus, the basic problem of the current study is whether CHACT can improve the function level of 7 to 12 year-old children with chronic pain?

Materials and Methods:
According to the criteria of chronic pain, a number of children with chronic pain were selected by available sampling method from specialty and subspecialty pediatric hospitals of Tehran. Then, among the children, 20 children who according to their parents prepared to participate in this study and met the inclusion criteria, were selected. They were placed in the experimental group (n=10) and control group (n=10). The child and parents versions of Function Disability Inventory (FDI) were answered by children and parents in both groups at the pre-test, post-test, first and second follow-up.

Result:
The result showed that the experimental group compared with the control group showed significant change in function in multiple stages ($P<0.05$). These changes continued after the treatment, first and secondary follow-up.

Conclusion:
Regarding the impact of CHACT on the function of children with chronic pain, it can be said that this protocol can be used in clinical fields, especially in the area of improving the function that appears that is one of the most vulnerable areas that children with chronic pain are faced with it.

Keywords: Acceptance, Chronic Pain, Function, Treatment.

***Corresponding Author:**
MA in Clinical Psychology, Faculty of Humanities, Shahed University, Tehran, Iran.
E-mail: Ghomian_s@yahoo.com
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Introduction

Today, it is accepted that the behavior of patients with chronic pain is important in the creation and persistence of pain and disability associated with it. In this regard, “apparent behavior of pain” and Psychological and environmental surrounding should be taken into consideration (1,2). By apparent behavior of pain it means the behavior which is done to avoid painful situations. Many studies of patients with chronic pain have emphasized the continuous application of avoiding from painful situations (2).

According to the fear-avoidance model of chronic pain, avoiding from painful situations will be followed by the increase of the functional inability (3,4). Also, the results of some studies suggest that high avoidance is associated with higher intensity of pain (3).

Results of the studies on anxiety and fear associated with pain (5,6), as well as the famous model of fear-avoidance, have emphasized the ineffective strategy of avoiding as one of the strategies to control chronic pain (7). On the other hand, different studies have shown that acceptance of pain is associated with reduction of anxiety (8,9) and consequently, reduction of disability related to pain(10,11). There are growing researches of acceptance of chronic pain. The results of these studies indicate similarly that the acceptance of pain is accompanied by decreasing avoidance, disability, pain and improving the function of the patients (2,7,11-26). Moreover, the results of different studies show that acceptance of pain compared with strategies based on pain control, is associated with better performance in patients with chronic pain (27). Thus, we can conclude that acceptance of pain and getting involved in activities, regardless of pain, can be associated with better psychological function in patients with chronic pain (15).

The acceptance and commitment therapy is a treatment based on the acceptance (28) that will lead to improved function of the patients in chronic conditions, especially when the "fight" with symptoms is associated with distress and long term disability and it interferes with the successful function (12). Acceptance and commitment therapy (ACT) includes the non-judgmental awareness and acceptance of all experiences (positive and negative experiences), identification of valuable orientation of life, and efficient operation based on the goals that are consistent with these valuations. The aim of this approach is to increase the function and reduce the interference of pain with valuation of life (a mechanism that occurs through the acceptance of pain)(27). Vowles and McCracken (29), have reported the effects of intensive therapy of 3 to 4 weeks of ACT in the treatment of chronic pain .The results of their study showed that ACT caused significant improvement in pain, depression, anxiety, disability and bodily function, after the treatment and 3 months follow-up period. The results of various studies have shown that sessions of 3 to 8 weeks of ACT leads to significant improvement in the function of patients with chronic pain. Also, two of the greatest studies of treatments for chronic pain have shown that ACT as the intensive treatment group for 3 to 4 weeks, showed a large effect size on disability, mood and physical function (27).

While there are many studies regarding psychotherapy for adults with chronic pain, few similar studies have been conducted in the pediatric population with chronic pain (25). On the other hand, school attendance, social function, physical activity and family responsibilities may be affected by chronic pain. Frequently, increasing daily function, considered to be one of the most important goals of psychotherapy for children with chronic pain. During the past decade, descriptive researches related to functional status of children with chronic pain show a substantial increase. However, there are a few clinical studies regarding the enhanced function of children (30) such as the research of Wicksell et al (31). The study was conducted in order to compare ACT with MDT (Multi-dimensional treatment in hospitals) in relation to the function and quality of the life of children suffering from long-term pain. Data from these two groups were assessed before and after treatment as well as 3.5 and 6.5 months after the treatment. The results showed a significant and sustained impact of ACT on the function and quality of the lives of these children (31). Also, According to surveys conducted, it was clear that in Iran there is a research gap in the field of therapeutic intervention to increase the function of the children with chronic pain. Given the above, the basic problem of the current study is whether CHACT[1] can improve the function level of 7 to 12 year-old children with chronic pain?

Materials and Methods

The present study was designed to investigate the effect of CHACT on the function of the children with chronic pain and was based on quasi- experimental model. The sample of the current research is composed of some of the 7-12 year-old children with chronic pain who referred to clinics and departments of specialty and subspecialty pediatric hospitals in Tehran. The sampling method is based on the available sampling method. Among patients referred to different clinics and departments of specialty and subspecialty pediatric hospitals in Tehran such as Mofid Children's Hospital, Children's Medical Center, Hazrat Ali Asghar Hospital and Bahrami Hospital (In these centers, different parts and clinics were used, such as: neurology, neurosurgery, surgery, blood, rheumatology, orthopedics and physiotherapy), 20 children who according to their parents were prepared to participate in this study and met the inclusion criteria, were selected.

Inclusion criteria for this study are as follows: 1-Being in the age range of 7 to 12 years old. 2- Engagement with education; evaluation of educational status (success or failure), according to the school status, was done by psychologist. 3- Obtaining a score of 13 to 29 (moderate disability) in Function Disability Inventory (FDI). Information about FDI will be provided in the research tools. 4- Having a history of developing chronic pain for 6 months or more, and at least 3 months of the first medical treatment in relation to chronic pain, according to viewpoint of physician and 5- the ability to attend meetings, according to the confirmation of the physician.

After the selection of subjects based on inclusion criteria, they were placed in the experimental group (n=10) and control group (n=10). Then, CHACT was implemented on the experimental group. This protocol was designed based on the books of ACT, initial grete of ACT on children, ACT on adults with chronic pain, model of anxiety treatment in children, model of Obsessive compulsive disorder (OCD) treatment in children and consu-ltation with Association for contextual behavioral science (ACBS) (such as doctor Hayes, Wicksell, Murrell and Wilson). More details about the protocol, such as templates and content of the meetings, is given in the previous paper (32).

Tools: the used tools in this study were as follows:

1) Demographic questionnaire:

The questions were about age, sex, education, chronic pain criteria (a history

[1] Acceptance and Commitment Therapy for Children with Chronic Pain (CHACT)

of developing chronic pain for 6 months or more, according to the approved physician and at least 3 months of the first medical treatment in relation to chronic pain), taking or not taking pain medication, type and amount of pain medication (if used), and education and occupation of parents.

2) Function Disability Inventory (FDI) (16)**:**
FDI is a 15-item scale that measures the child's ability for functional activities, such as school, home, leisure and social activities. The addressed activities in this questionnaire include: reading, watching TV, going to the heights, doing homework and so on. Two factors associated with FDI include: physical activity (8 items) and daily activities (7 items). FDI is based on a 5-grade scale from 0 "no problem" to 4 " impossible"(29). The scores' range of FDI is 0 to 60. The range of 0 to 12, 13 to 29, and the range of 30 or above measure respectively mild or no disability, moderate disability, and severe disability (11). Suitable internal consistency and reliability of the FDI has been reported. Numerous researchers have shown good psychometric properties of the instrument for both clinical and non-clinical samples (28). Ghomian and colleagues (33) have reported good psychometric properties of the Persian version of FDI.

FDI were used before and after treatment and first follow-up (1.5 months after treatment) and second follow-up (5 months after treatment).

Materials and Method

In this study was used descriptive statistics. Also, because of the lack of the assumptions related to parametric tests, Friedman Test was used for examination of change in different time periods and Mann-Whitney Test was used for comparison of difference between the groups in the pre-test, post-test, first and second follow-up. We used SPSS-19 software for data analysis.

Results

The results are presented in two sections of descriptive and analytical results:

A) Descriptive results:

The descriptive results of this study suggest that the mean age (SD) of the experimental and control group were respectively: (10.60 ± 1.7) and (10.20 ± 1.81). The experimental group consisted of 4 girls and 6 boys, and the control group consisted of 5 girls and 5 boys. In both groups, most patients were suffering from chronic pain caused by rheumatoid disease and the rest were suffering from the pain in the chest, leg, kidney, and so on. Many subjects in both groups were taking medication. In both groups, many parents were educated in middle school.

(Table1) presents the descriptive indicators of disability function variable and its subscales. As can be seen, in the experimental group (based on the assessment of children and parent), disability function variable and its subscales, have changed from pretest to posttest and have remained relatively constant in the first and second follow-up. In the control group (based on the assessment of children and parents), disability function variable and its subscales, remained relatively constant in all four time sections. Significant and non-significant statistical results of this status will be presented in the next section.

B) Analytical results:

Before addressing these results, it is worth mentioning that in both groups, based on the views of parent and children, comparing disability function variable is not significant in pre-test [Functional Disability,-.114 (.910); Routine Disability, -.115 (.909); Total Score, -.266 (.790) and also, in parent group was achieved in this case: Functional Disability, -.950 (.342); Routine Disability, -2.619 (.059); Total Score, -1.476 (.140)].

Table 1: Mean (SD) of the studied variables in experimental and control groups based on the responses of children and parents.

			Pretest	Posttest	Follow up 1	Follow up 2
Children	Physical disability	Experimental group	37.70(12.40)	5.90 (3.54)	5.60 (2.79)	6.20(3.82)
		Control group	37.80 (5.28)	12.20(4.89)	12.10(5.20)	12.30(4.83)
	Routine disability	Experimental group	5 (3.62)	2.70 (1.63)	4 (2.16)	2.80(1.68)
		Control group	5.50 (5.03)	6.10 (4.67)	6 (4.16)	6.20(4.80)
	Total (functional disability)	Experimental group	17.40 (6.53)	8.60 (4.32)	9.60 (4.08)	9 (4.66)
		Control group	16.50 (6.18)	18.30(6.34)	18.20(5.84)	18.50(6.11)
Parent	Physical disability	Experimental group	7.70 (5.35)	3.70 (2.11)	4.10 (2.55)	4 (2.16)
		Control group	11.70 (8.61)	11.69(8.73)	11.60(8.57)	11.70 (8.75)
	Routine disability	Experimental group	3.40 (2.63)	1.80 (1.87)	2.30 (1.56)	1.70 (1.94)
		Control group	10.80 (7.65)	11.40 (7.54)	11.39(7.41)	11.10(7.41)
	Total (functional disability)	Experimental group	11.10 (7.46)	5.50 (3.30)	6.40 (3.50)	5.70 (3.49)
		Control group	22.50(15.74)	23.10(15.66)	23 (15.34)	22.80(15.57)

The analytical results of this study are presented in (Tables 2,3,4,5). As can be seen in (Tables 2 and 3), in the experimental group, disability function variable and its subscales, based on the views of children and parents, are obtained significant at different time sections. (Tables 3 and 4) show the meaningful comparison of variables between the control and experimental groups. As can be seen in these tables, both groups generally show significant differences in relation to many variables.

Table 2: Function disability change and its subscales in the four time; pre-test, post-test, first and second follow-up. (based on view of children)

		Chi - Square	df	P value
Experimental group	Physical disability	22.807	3	.001**
	Routine disability	11.720	3	.008**
	Total (Functional disability)	20.464	3	.001**
Control group	Physical disability	7.012	3	.070
	Routine disability	2.051	3	.213
	Total (Functional disability)	4.950	3	.175

Table 3: Function disability change and its subscales in the four time; pre-test, post-test, first and second follow-up.

		Chi - Square	df	P value
Experimental group	Physical disability	13.880	3	.003**
	Routine disability	11.613	3	.009**
	Total (functional disability)	12.448	3	.006**
Control group	Physical disability	.796	3	.850
	Routine disability	5.226	3	.156
	Total (functional disability)	2.487	3	.478

*P<0.05 **P<0.01

Table 4: Comparison of function disability in experimental and control groups (based on view of children)

		Physical disability		Routine disability		Total (Functional disability)	
		Experimental group	Control group	Experimental group	Control group	Experimental group	Control group
Pretest with post test	Mean(SD)	31.80(13.06)	25.60(4.94)	2.30 (2.62)	-.60 (.96)	8.80 (6.40)	-1.80(2.65)
	Z(P value)	-.606(.579)		-2.814(.004)**		-3.675(.001)**	
Pretest with follow up1	Mean(SD)	32.10(13.27)	25.62(4.81)	1.00 (3.46)	-.50(1.17)	7.80 (6.97)	-1.70(2.90)
	Z(P value)	-.833(.436)		-.691(.529)		-3.340(.001)**	
Pretest with follow up2	Mean(SD)	31.50(13.06)	25.50(5.01)	2.20 (2.69)	-.70 (.94)	8.40 (6.55)	-2.00(2.49)
	Z(P value)	-.606(.579)		-2.783(.005)**		-3.677(.001)**	
Posttest with follow up1	Mean(SD)	.30 (1.25)	.00 (.94)	-1.30 (1.63)	.10 (.87)	-1.00 (1.56)	.10 (1.37)
	Z(P value)	-.560(.631)		-2.469(.015)*		-1.729(.105)	
Posttest with follow up2	Mean(SD)	-.29 (.48)	-.10 (.73)	-.10 (.31)	-.09 (.31)	-.40 (.69)	-.20 (.78)
	Z(P value)	-.608(.631)		.000(1.000)		-.336(.796)	
Follow up1 with follow up2	Mean(SD)	-.60 (1.50)	-.12 (.99)	1.20 (1.68)	-.20(1.03)	.60 (1.89)	-.30 (1.49)
	Z(P value)	-.784(.481)		-2.209(.035)		-1.158(.280)	

*P<0.05 **P<0.01

Table 5: Comparison of function disability in experimental and control group (based on view of parent)

		Physical disability		Routine disability		Total (Functional disability)	
		Experimental group	Control group	Experimental group	Control group	Experimental group	Control group
Pretest with post test	Mean(SD)	4.00 (3.55)	.10 (.56)	1.60 (1.89)	.00 (.94)	5.60 (5.21)	.10 (1.10)
	Z(P value)	-2.690(.007)**		-3.077(.003)**		-3.006(.002)**	
Pretest with follow up 1	Mean(SD)	3.60 (3.47)	.09 (1.72)	1.10 (2.28)	-.60 (.84)	4.70 (5.31)	-.50 (1.26)
	Z(P value)	-2.257(.023)*		-2.711(.007)**		-2.379(.019)*	
Pretest with follow up 2	Mean(SD)	3.70 (3.74)	.00 (1.56)	1.70 (1.82)	-.30 (1.05)	4.69 (5.35)	-.53 (1.20)
	Z(P value)	-.606(.579)		-2.783(.005)**		-3.677(.001)**	
Posttest with follow up 1	Mean(SD)	-.40 (.69)	.10 (.56)	-.50 (.97)	.00 (.94)	-.90 (.99)	.10 (1.10)
	Z(P value)	-1.636(.190)		-1.221(.280)		-1.996(.052)	
Posttest with follow up 2	Mean(SD)	-.30 (.67)	.00 (.47)	.10 (.31)	.30 (.48)	-.20 (.78)	.30 (.67)
	Z(P value)	-1.028(.481)		-1.090(.481)		-1.465(.218)	
Follow up 1 with follow up 2	Mean(SD)	.10 (1.10)	-.10 (.73)	.60 (.96)	.32 (1.05)	.70 (1.33)	.20 (1.13)
	Z(P value)	-.570(.631)		-.591(.579)		-.893(.393)	

*P<0.05 **P<0.01

Discussion

The purpose of the current study was to determine the effect of CHACT on the function of 7 to 12 year-old children with chronic pain. Overall, this research indicated that children who have received CHACT compared to the children who did not receive this treatment, showed significant changes in function.

With regard to this fact that the overall function of the experimental group showed a significant change, we can say that this finding is generally consistent with the findings of researches that conducted in the field to apply acceptance-based treatment to improve function in patients with chronic pain. Among these studies, can be cited McCracken et al. (7), Viane et al (20) and Vowles et al (12). Moreover, it can be said that these results are consistent with the study of Wicksell et al (31), which was designed to investigate the therapeutic effects of ACT on children's function and the quality of life in comparison to MDT (multi-dimensional treatment used in hospitals) and also with the study of Wicksell and colleagues (25), that indicated the therapeutic effects of ACT on the functional ability, increase in school attendance and decrease in catastrophizing of 14 adolescents with idiopathic chronic pain .

In this study, in the experimental group, the overall score and subscale associated with disability in daily function have changed. It seems that one of the reasons for this change of variable is the change in the angle of view of the subjects from pain management toward the valuing. Of course, this change in the perspective was an introduction and prerequisite for the practice of exposure which is another step to enhance the subject's function. The remarkable notes that the findings of this study indicate is that although physical function subscale from the perspective of children showed no significant change, this subscale from the perspective of parents showed significant change. It seems that one reason for this difference in views of children and parents is the magnification of physical recovery process of children from the perspective of their parents. In general, the results of some researches suggest the difference between parents' and children's perspectives. Among these studies can be cited the studies of Peterson and Toler (34) and Reid, Gilbert and McGrath (35). This result are consistent with the findings of the studies that suggest different perspectives in parents and children. Of course, as it was observed, the views of parents and children showed similar results on many variables and this generally indicates the consistency of the views of parents and children that have been obtained in many researches. Among the subscales of FDI, physical disability subscale from the perspective of children showed no significant change in the experimental group. It seems that one of the reasons for this lack of significance in physical disability subscale is the inequality in pain and disease conditions in experimental and control groups.

Conclusion

Regarding the impact of CHACT on the function of children with chronic pain, it can be said that this protocol can be used in clinical fields, especially in the area of improving the function that appears to be one of the most vulnerable areas that children with chronic pain are faced with it. While this study was an attempt to determine the impact of CHACT on children with chronic pain, regarding the limited sample size, it requires multiple checks in terms of economic, social and cultural diversity in Iran. There is no doubt that if the conditions of comparing CHACT with other psychological treatment of chronic pain in children and also with the "placebo" was obtained, its role and impact would be seriously evaluated.

Ethical considerations

The Authors completely observed the ethical issues such as: informed consent, double publication and/or submission, plagiarism, misconduct, etc.

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Conflict of interests

The authors declare that there is no conflict of interests.

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