ORIGINAL RESEARCH

The effectiveness of cognitive behavioral group therapy on anxiety-depressive symptoms and emotion regulation in child laborers

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Date Received: March, 2018 Date Accepted: December, 2019 Online Publication: February 28, 2019

Abstract

Objectives: This study was aimed to determine the effectiveness of Cognitive Behavioral Group Therapy on anxiety-depressive symptoms and emotion regulation in child laborers. Materials & Methods: This study was a randomized clinical trial conducted on child laborers. The obtained data were collected from 15 participants in the experimental and 15 in the control group. The members of control group didn’t receive any intervention. The participants in experimental group received the cognitive-behavioral group therapy based on "coping cat" program. The treatment consisted of 18 weeks of 90-min sessions meeting once a week. Participants of two groups completed the Revised Child Anxiety and Depression Scale (R-CADS) and Cognitive Emotion Regulation Questionnaire-child version (CERQ-K) before and after intervention and three months later. Results: Repeated measurement of ANOVA indicated that the CBT significantly decreased depressive-anxiety symptoms and negative emotion regulation strategies as well as increased positive emotion regulation strategies. Furthermore, results yielded moderate to large effect sizes for improvement of dependent variables. Conclusion: This study showed significant differences in anxiety-depressive symptoms and emotion regulation between two groups. Therefore, CBT seems to be an effective intervention in child laborers. However when applying this intervention, the special cultural, social, educational and economic conditions of these children must be considered.

Keywords: Cognitive behavioral group therapy, Anxiety, Depression, Child labor
Introduction
Under the terms of the United Nations Declaration about the Children's Rights, child laborers refer to people under the age of 18 who are forced to work to continue their survival. They are not supported by responsible adult (1). According to the World Labor Organization, child laborers are taken up in some kind of jobs, which deprives them from their childhood. As well as they can’t attend regularly at school. Child labor is psychologically, physically, socially, and morally dangerous and harmful for children(2).

There is no accurate data on the number of child laborers in the world, although UNICEF estimates them more than 150 million people, and as the world population grows, this number also increases. According to this agency, there are more than 25 million child laborers in Asia(1). The World Labor Organization reported an approximate number of these children about 168 million people aged between 5 and 17 years old (around 11% of the world's total children and adolescents). About half of them (85 million people) are directly exposed to psychological, hygienic and moral hazards (2). In Iran, different and sometimes contradictory statistics about child laborers are announced. Their number have estimated from 20,000 to 2 million (3).

Child laborers are often exposed to a variety of emotional disorders such as anxiety and depression (4). The result of a study in Pakistan indicated that child laborers suffer from depression and anxiety. Increase in depression causes increase in anxiety and vice versa (5).

Child laborers have difficulties in emotion regulation. They are exposed to a variety of abuses. When the child is exposed to these mistreatments, the world become scary and unpredictable. In these situations, most parents of these children are also not available to play their role in shaping, describing and adjusting their emotions, and providing a framework for emotion regulation. In the environments where these children live, the situation is such that they are often excited. These high levels of arousability can reduce the psychological resources needed to effectively regulate emotions (6). In general, we can say that difficulties in emotion regulation and anxiety-depressive symptoms are the most common psychological problems among children (7), especially child laborers (5). They can causes significant problems in children's daily life (7). The cost of supporting children and adolescents with emotional disorders can be very high. In the absence of timely treatment, the financial burden of treating these people in adulthood is imposed on the community (8). However, only 20% of children receive mental health services (9). In addition, children with subclinical symptoms of these disorders which do not fully assess the diagnostic criteria, are often overlooked and do not receive appropriate psychological services (10). For decreasing this financial burden, identifying and presenting effective treatment for at risk people is essential (11). One group of these at risk people are child laborers (12).

Cognitive-behavioral interventions are one of the most effective methods for the treatment of emotional disorders (7). Cognitive-behavioral interventions declare the interactions among behavior, cognition, emotion, social factors, and environmental consequences (13). There are some studies on childhood emotional disorders, which has utilized cognitive behavioral intervention, but most of them was in a individualized format, with fewer being conducted in group format (14). There was only one study in the world, which evaluate the effectiveness of cognitive-behavioral group therapy based on "coping cat" program in children. The results of that study showed that the intervention has significant effects on decreasing emotional symptoms (14).

So far, no research has evaluated the effectiveness of cognitive-behavioral group therapy based on "coping cat" program in child laborers. Therefore, the purpose of this study was to evaluate the effectiveness of cognitive-behavioral group therapy based on "coping cat" program on anxiety-depressive symptoms and emotion regulation in child laborers. The main objective of the current study was to evaluate the effectiveness of cognitive behavioral group therapy on anxiety-depressive symptoms and emotion regulation in child laborers. An attempt was also made to determine the following:

- Determining the effect of cognitive behavioral group therapy on anxiety-depressive symptoms
• Determining the effect of cognitive behavioral group therapy on emotion regulation

Materials and Methods
This study is a semi-experimental research with pre-test, post-test and control group. The statistical population of the present study was all of the child laborers in Tehran in 1397. The participants were 30 girls aged between 8-11 years old. They were members of an Institute for the empowerment of child laborers named "Mehromah" in Tehran, during April to December in year 2018. Sampling was done purposefully using a screening method. Participants were selected by semi-structured interviews for emotional disorders and schizophrenia for children at school age (KSADS-PL) and according to inclusion and exclusion criteria. The inclusion criteria includes:

• Membership in Institute for the empowerment of child laborers named "Mehromah".
• Having subclinical symptoms of anxiety and depression.
• Aged between 8 to 11 years.
• The interest of participants and their parents for participating in research according to written consent.

The exclusion criteria includes:

• Clinical psychiatric disorders.
• Having a chronic medical condition.
• Receiving similar psychological intervention simultaneously with this intervention.
• Medication simultaneously with this intervention or within one month before intervention.
• Dissatisfaction to continue the treatment sessions during the intervention.

The Revised Child Anxiety and Depression Scale (RCADS):
The RCADS is a 47-item questionnaire, developed by Chorpita and Ebetsutani in 2000. It is a self-report scale that assesses a range of psychological disorders in children and adolescent according to DSM-IV criteria including separation anxiety disorder, social phobia, generalized anxiety disorder, panic disorder, obsessive compulsive disorder and major depressive disorder. It yields an overall score for anxiety and depressive symptoms. RCADS is rated on a Likert scale from 0 (never) to 3 (always). It has been reported to have acceptable reliability and validity in clinical (15) and non-clinical adolescent samples (16). The Internal consistency of the scale was 0.83 (11).

Cognitive Emotion Regulation Questionnaire-child version (CERQ-K):
The child version of the Cognitive Emotion Regulation Questionnaire (CERQ-k) is an adapted version of the original adult version. The items were rephrased to better fit the cognitive abilities of children aged 9 years and older. Garneski et al. developed this questionnaire in 2006. This is a 36-item and self-report questionnaire. It assesses what children tend to think after experiencing threatening or stressful negative life events. The answer categories for each of the items range from 1 [(almost) never] to 5 [(almost) always]. (17). It has good reliability and validity in Iranian population. The Cronbach's alpha coefficients was 0.86 (18).

During an introductory session before the intervention, both the child and one of her parents signed the consent. The demographic characteristics questionnaire, the R-CADS revised scale of children's anxiety and depression and Cognitive Emotion Regulation Questionnaire-child version (CERQ-K) were completed and their pre-test scores were recorded. In the next step, the participants were randomly assigned in to two groups. The experimental group received the cognitive-behavioral group therapy. The control group did not receive any formal intervention. After completion of the intervention (post-test) and also three months after it (follow up), the questionnaires were completed again. All participants in both groups were present in all treatment sessions and were not absent. In addition, all participants participated in all three stages of pre-test, post-test and follow up. The treatment protocol adapted the manual by Kendall et al. (1990) for use in the group condition (Flannery-Schroeder & Kendall, 1996). The therapist was Ph.D. candidate in clinical psychology with certification in child psychotherapy from Iranian Psychological Association and Iranian Pediatric Psychiatric Association. Participants received the
cognitive-behavioral treatment protocol in a
group format. The treatment consisted of 18
weeks of 90-min sessions once a week. The
first half of the treatment protocol involved the
教学 of coping skills; the second half
involved exposure to emotion-eliciting
situations and the practice of the skills
acquired in the first half of treatment. Treatment consisted of four main components:
(1) the recognition and labelling of somatic
reactions and emotional feelings; (2) the
recognition and modification of negative self-
Talk; (3) the development of a plan to cope
with the emotional situations; and (4) the
evaluation of performance and provision of
reward. The treatment outline for the group
treatment was as follows (14):

In the statistical analysis, data was evaluated
using SPSS 23. Repeated measures ANOVA, t
Test, chi-squared and Hedges' g were used to
analyze the data.

Results
Descriptive characteristics at baseline
Adherence was measured by using the
percentage of completed prescribed
homework. Participants completed about 80%
of homework. Some of the participants didn’t
complete some of the homework.

There was no dropout in treatment group
during the treatment and at follow up. Before
analyzing the differences between CBT and
control groups in study variables, the
differences in demographic variables were
examined. Results of t-test and chi-square showed no significant differences in age ($t_{(28)} = -.319, p<.75$) and grade ($\chi^2_{(3)} = 1.71, p=.63$) between CBT and Control groups.

At baseline assessment, there were no
significant differences between groups in
Depressive-Anxiety symptoms ($t_{(28)} = -.20, p = .83$), positive emotion regulation ($t_{(28)} = .05, p = .95$), and negative emotion regulation strategies ($t_{(28)} = -.80, p = .42$).

Treatment outcomes
Mean (standard deviation) of control and CBT
groups age were 10.13 (1.18) and 10.20 (1.14)
respectively. Mean and standard deviation of
dependent variables are presented in table 1.

Table 1: Mean and Standard deviation of
Depressive-Anxiety symptoms, positive
emotion regulation, and negative emotion
regulation strategies.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean ±SD/Control</th>
<th>Mean ±SD/CTB</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Post</td>
<td>Follow-up</td>
</tr>
<tr>
<td>Depression</td>
<td>0.76</td>
<td>0.54</td>
</tr>
<tr>
<td>Anxiety</td>
<td>0.76</td>
<td>0.54</td>
</tr>
<tr>
<td>Depression</td>
<td>0.76</td>
<td>0.54</td>
</tr>
<tr>
<td>Anxiety</td>
<td>0.76</td>
<td>0.54</td>
</tr>
<tr>
<td>N. emotion regulation</td>
<td>0.76</td>
<td>0.54</td>
</tr>
<tr>
<td>P. emotion regulation</td>
<td>0.76</td>
<td>0.54</td>
</tr>
<tr>
<td>Negative emotion regulation strategies</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

To assess the effectiveness of CBT program,
repeated measures ANOVA was conducted to
evaluate the effect of CBT on anxiety-
depressive symptoms and emotion regulation
strategies. In regard to anxiety-depressive
symptoms, Mauchly’s test indicated that the
assumption of sphericity had been violated, $\chi^2 (2) = 16.12, p <0.001$, therefore, degrees of
freedom were corrected using Greenhouse-
Geisser estimates of sphericity ($\epsilon = 0.58$).

Results showed that there was significant
effect of CBT on anxiety-depressive symptoms, $F (1.16, 16.36) = 33.52, p <0.001, \eta^2 = 0.70$. In regard to positive emotion
regulation, Mauchly’s test indicated that the
assumption of sphericity had been violated, $\chi^2 (2) = 11.55, p <0.003$, therefore, degrees of
freedom were corrected using Greenhouse-
Geisser estimates of sphericity ($\epsilon = 0.74$).

Results showed that there was significant
effect of CBT on positive emotion regulation, $F (1.49, 43.34) = 44.72, p <0.001, \eta^2 = 0.60$. In regard to negative emotion regulation,
Mauchly’s test indicated that the assumption
of sphericity had been violated, $\chi^2 (2) = 14.42,
p <0.001$, therefore, degrees of freedom were corrected using Greenhouse-Geisser estimates
of sphericity ($\epsilon = .71$). Results showed that
there was significant effect of CBT on negative emotion regulation, $F (1.42, 41.32) = 93.07, p <0.001, \eta^2 = 0.36$. To examine
whether treatment efficacy was obtained, a
three months follow up, a paired t-test was done for all dependent variables. There weren’t significant improvement from post-treatment to three months-follow up in anxiety-depressive symptoms, positive emotion regulation, and negative emotion regulation strategies. Furthermore, effect sizes of pre-treatment to post-treatment and post-treatment to follow-up treatment are presented in Table 2.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Baseline to post-treatment</th>
<th>Post-treatment to follow up</th>
<th>Baseline to Follow up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent anxiety</td>
<td>0.85</td>
<td>-0.85</td>
<td>-2.04</td>
</tr>
<tr>
<td>P. emotion regulation</td>
<td>-0.85</td>
<td>-0.85</td>
<td>-2.04</td>
</tr>
<tr>
<td>N. emotion regulation</td>
<td>-0.71</td>
<td>0.77</td>
<td>4.4</td>
</tr>
</tbody>
</table>

**Table 2: Paired t-test and effect size of dependent variables.**

**Discussion**

The purpose of this study was to evaluate the effectiveness of cognitive behavioral group therapy on anxiety-depressive symptoms and emotion regulation in child laborers. So far no research has evaluated the effectiveness of cognitive-behavioral in a group format based on "coping cat" program in child laborers. Child laborers are often exposed to a variety of emotional disorders such as anxiety and depression (4). The present study showed that cognitive-behavioral group therapy based on the "coping cat" program reduced the symptoms of anxiety and depression in child laborers, while the control group's symptoms did not change during the waiting period. The three-month follow-up also showed that the treatment effects remain stable for at least three months.

There are some studies, which evaluated the effectiveness of individual format of cognitive-behavioral therapy based on "coping cat" program in children with emotional problems. Zarghami et al. (2016) in a study evaluated the effectiveness of individual version of cognitive behavioral therapy based on "coping cat" program on reducing the symptoms in children aged 8-10 years with anxiety. It showed that the treatment significantly reduced the anxiety symptoms of the treatment group in comparison with the waiting group. The effects were continued throughout the one and a half months and three months follow-up (19).

In addition, this finding was consistent with findings of Kendall et al. (1994, with 53% recovery) (20); Bart et al. (1996, 57% recovery) (21), Kendall et al. (1997, 55% recovery) (22), Flannery and Kendall (2000, with 73% recovery) (14); Nayuta et al. (2003, with 54% recovery) (23), Kendall et al. (2008, 53.2% recovery) (24), and Valkupe et al. (2008, 59% recovery) (25).

In explaining this finding and the effectiveness of this type of treatment in the symptoms of anxiety and depression in child laborers, it can be directed towards the general orientation of cognitive-behavioral therapy and its therapeutic components. Kendall and Halon first introduced the application of cognitive-behavioral approach to the symptoms of children with emotional disturbances. Based on the underlying assumptions of this approach, the primary experiences of the child lead to the development of inconsistent patterns of thinking. These children understand obscure events as threatening events. They have a lot of tendencies for defamation, and their level of self-reflection and negative expectations are high. Cognitive-behavioral therapy deals with identifying and changing how events and experiences are interpreted, since by default, cognitive patterns are inaccurately learned and activated, and subsequently affect behavior and feelings. Changing these patterns can lead to reduced symptoms of disturbances (24).

According to the particular circumstances of the life of child laborers, these children have more unfavorable developmental experiences than the majority of their peers, so the likelihood of forming incompatible beliefs and thoughts, and consequently anxiety and depression symptoms, are more. Training cognitive behavioral techniques such as teaching relationships between thoughts, feelings and behaviors, recognizing and identifying thoughts in different situations, awareness of cognitive distortions and recognizing them, encouraging cognitive restructuring and learning new cognitive skills (positive self talk and problem solving) can help child laborers to cope better with challenging real-life situations and reduce the
symptoms of anxiety and depression in these children.

Child laborers are exposed to a variety of mistreatments. These high levels of arousability can reduce the psychological resources needed to effectively regulate emotions and cause difficulties in emotion regulation (6). Another findings of this study showed that there was significant effect of CBT on improving positive emotion regulation strategies and reducing negative emotion regulation strategies in child laborers. This finding is consistent with the research results of Suveg et al., which showed that cognitive-behavioral therapy increases the positive emotional regulation strategies and reduces the negative emotion regulation strategies (26). In another consistent study Kendal et al., showed that treated youth exhibited an increase in emotional awareness at post treatment. Treated youth also demonstrated improved coping and less emotional dysregulation. It also caused reduction in anxiety level (27). Some components in CBT based on "coping cat" program like learning to recognize and distinguish the main emotions, identify the physiological changes associated with these emotions and training deep breathing and relaxation can increase the positive emotion regulation strategies and reduce negative emotion regulation strategies. In general emotional competence is a crucial component in children's adaptive social functioning and psychological adjustment. So improving positive emotion regulation strategies and reducing negative ones can have important role in reducing anxiety and depression symptoms (26).

This study had some limitations like any other studies. In spite of some common aspects between child laborers with other children, there are distinctions between these children and their other peers. As a result, the therapist or researcher faces some challenges in implementing this treatment program in these children. Therefore, when applying this program, the special cultural, social, educational and economic conditions of the target community must be considered. For example, some of these conditions in child laborers are inadequate familiarity of them with exploratory education. While cognitive-behavioral therapies such as "coping cat" emphasize on this type of education. Also, designing and timing of assignments must be considered more carefully according to the special life condition in child laborers. Despite the randomness and control group, there are some limitations, such as limited sample size and sample single-sex. Therefore, in view of the limitations mentioned above, it is suggested that future studies should be run on a wider sample of both sexes. Also, the implementation of this treatment program on a broader age range will show its effectiveness over other age groups and will allow comparison of results in different age groups.

Conclusion
This study showed significant differences in anxiety-depressive symptoms and emotion regulation between the two groups. Therefore, Cognitive-Behavioral Therapy based on "coping cat" program seems to be an effective intervention in child laborers. However, when applying this intervention, the special cultural, social, educational and economic conditions of these children must be considered.

Acknowledgement
The authors thank Ms. Afkham Sabbagh, head of the Mehromah Institute as well as Ms. Bita Barahouei, the social worker of that Institute, for their kind support. We also thank the children and their parents for their cooperation and participation in this study.

Funding
This study was supported by grant from Shahid Beheshti University of Medical Sciences

Conflict of interest
Authors declare no conflict of interest.
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