

Effectiveness of Cognitive Behavioral Therapy a long with Conventional Treatment in Asthma Patients Compared with Solely Conventional Therapy

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Abstract

Background: While origin of Asthma is allergy and infection, mental stresses can also indicate asthma attacks. Most people with asthma argue that the reason of asthma attacks is mental-psychological problems such as stress.

Aim & objective: Asthma is a chronic and recurrent disease. High levels of stress in this disease are associated with increased hospitalization and mortality, so this research aims to use cognitive behavioral therapy in order to control stress among patients with Asthma.

Method/Study Design: Present study is a field and Quasi-experimental whose statistical society includes all patients with Asthma who have referred to Khatamol-Anbia Hospital for treatment. A total of 48 individuals were tested and controlled by purposive sampling procedure. 8 individual CBT sessions were conducted in experimental group during intervention period then the number of asthma attacks in the pre-test and post-test periods was evaluated

Results/Finding: After analyzing data with SPSS software, results show that there exists significant difference between experimental and control group in post-test in ACQ, ASES and AQLQ questionnaires which is significant between two groups by a difference of $p < 0.001$ but this difference wasn't significant in pre-test.

Conclusion: The results suggest that cognitive behavioral therapy along with conventional treatment in asthma patients can be effective on reduction of asthma attacks. Individual management improvement is based on such behavioral factors as daily scanning on symptoms and adherence to treatment which is affected by Asthma Self-Efficacy (ASE). This issue suggests the trust to ability in performing necessary behaviors on personal management for disease symptoms and prevention of recurrence.

Key Words: Asthma, cognitive behavioral therapy (CBT), Conventional Therapy

Introduction

Within each physical discomfort, there exists a solid relationship between social, psychological and psychological concepts. The relationship between psyche and body, including influence of psychological factors on the body and physical phenomena have been considered and reviewed by scientists historically. Health and disease are not only dependent upon physiologic conditions, but also are correlated with individual thoughts, emotions and motivations.¹

Chronic daily stress may not only result in dissatisfaction with life, but also it may cause problematic physical symptoms.² Stress may effect on immunity system in effective ways and having stress might endanger successful ability of the organism to self-defend. Apparently, immunity responses are somewhat dependent upon the ability to overcome stressful stimuli.³ Mood states and emotions can effect on immunity system. Depression is associated with inhibition of "T" cell activity and also inhibition of lymph glands activity.^{4,5} Anxiety, anger and hostility also increase levels of Corticosteroids (e.g. Cortisol) and Catecholamines (e.g. Epinephrine) and thereby would cause to inhibit immunity system and even impair metabolism of the body.⁶ Epinephrine specifically might cause to increase deterrent "T" cells and decrease helpful "T" cells.^{7,8}

According to some researchers' opinion, stress is an internal feeling which is made up in response to given events or thinking about those events.⁹ Stress is a mode which most probably would cause a disorder in physiologic or mental-natural applications of a person. Stress is anything that confronts individual survival with danger and threat.¹⁰

Some other view stress as a process which ensures interaction between person and his/her environment.¹¹ Stress rate is dependent upon the person's evaluation from events and available resources to deal with them.¹² There are some research evidences which suggest a relationship between psychological factors, especially chronic negative emotions experience with such psychosomatic diseases as peptic ulcer, rheumatoid arthritis, asthma and headaches.¹³ Emotions, whether positive or negative, play a critical role to adjust performance of immunity system. Researchers have shown that paranoia and distrust, depression and stress caused by large and

small events are associated with immunity system disorder.¹⁴ Asthma is a chronic disease and respiratory response which causes wheezing, makes breathe harder, and even results in fatal respiratory disorder. Perhaps consumedly nervous system response is the cause of chronic anxiety and reason of asthma as well.¹³

This disease is a chronic and attack disease whose main specification is wide narrowing of the tracheobronchial tree and symptoms include coughing, wheezing, tightness and pressure in the chest and shortness of breath. Specific feature of patients with Asthma is that patients have excessive dependency needs. Fears of breath shortness can directly start Asthma attacks and high levels of anxiety are in line with hospitalization rates and mortality related with Asthma. Specific personality traits are existed in the patients with Asthma such as extreme fear, emotional instability, sensitivity to rejection and lack of stamina and resilience in difficult situations.¹⁰ Stress process has emotional, behavioral and cognitive physiological effects and sometimes it makes people vulnerable against disease.¹⁵ On the other hand, lack of control increases the stress and raises Levels of Epinephrine and Norepinephrine.¹⁶

One of the psychological-social ways to adjust control is to describe feelings about stressor event which may cause to change the person's evaluation from stress.¹⁷ Psychological-behavioral methods play an important role to help better controlling against stressor events and countermeasures related with these evaluations in determining response to stress. Main core of major stress management plans is composed of five skills as: self-observation cognitive restructuring, relaxation, time management and problem solving.¹⁰ Cognitive-behavioral therapy: a treatment which emphasizes on important role of thought in etiology and problems' continuity. Cognitive-behavioral techniques aim to modify thought patterns which play a role in making patient's problem.¹⁵

Dahl et al. in 1990 entered 20 children aged 12 (with severe asthma symptoms) to a RCT study.²⁰ Such authors divided patients into two groups. In subject group, such practices as behavior therapy, individual management of respiration, coping with fears and managing behaviors associated with asthma were offered; and in control group, only usual drug treatment was conducted. Amount of drug use, school absenteeism and asthma attacks experienced were considerably lower in subject group.¹⁸ Paul Lehrer in 2008 evaluated two protocols for treating adults with comorbid asthma and panic disorder.¹⁹ The protocols included elements of Barlow's "panic control therapy" and several asthma education programs, as well as modules designed to teach participants how to differentiate asthma and panic symptoms, and how to apply specific home management strategies for each. Fifty percent of subjects dropped out of a 14-session protocol by the eighth session; however, 83% of patients were retained in an eight-session protocol. Clinical results were mostly equivalent: significant decreases of >50% in panic symptoms, clinically significant decreases in asthma symptoms, improvement in asthma quality of life, and maintenance of clinical stability in asthma.

Grover et al in 2002 assessed CBT as well; and in control group, they were only under drug treatment. In this assessment, Asthma symptoms, anxiety and depression were decreased and Quality of Life for patients was increased in subject group.²¹ However, none of these studies except the most recent by Ross et al. has evaluated a sample of participants with co-morbid asthma and clinical anxiety manifestations.²² Studies have shown that improved knowledge alone does not

improve control of asthma .When combined with behavioral therapy the outcome improves. This was observed in the study done by Grover et al.²³ After cloning; they inserted 10 patients with asthma into two subject and control groups. In subject group, the patients were treated under drug and CBT revealed in a RCT study that CBT treatment causes to improve asthma.²² It appears that cognitive treatments can be very effective in terms of mild to moderate anxieties. Using cognitive strategies can result in increasing influence treatment plans. However, specific studies which compare effects of alone facing and/or pharmaceutical interventions with each other have not been conducted yet. Training to control stress usually is taken from 8 to 16 sessions where treatment period is specified according to severity of the patient's problem. Stress controlling is the best successful when there exists a relationship between stress and physiological disorder.²³

Feelings of arousal is also has direct relationship with asthma symptoms indication and measuring the air rate which is passed across respiratory tract. In a study where stress rate of people and their rate of respiratory flow had been measured, findings implied that high stress and negative mood has direct relationship with decreased respiratory flow and increased asthma

Symptoms.²⁴ The individuals' thought content plays an important role in their power to control behaviors. Evaluation and expectations of people from their ability have also substantial role on keeping behavioral changes.²⁵ One must be aware of possible damages of negative self-evaluation and utilize successful self-learning.²⁶ So this research aims to use cognitive behavioral therapy in order to control stress among patients with Asthma.

1. Specifying CBT effect on number of asthma attacks during a week (ACQ)
2. Specifying effect on CBT Asthma Quality of life Questionnaire (AQLQ)
3. Specifying CBT effect on Asthma Self-Efficacy Scale (ASES)

Material and Method

This research is field-type and is an experimental study with pretest- posttest. The statistical society includes the patients diagnosed with mild to moderate asthma who refer to Khatam-ol-Anbia Hospital on an outpatient basis. All the patients or their parents will give a written consent after a full explanation. Patients were observed by internal medicine specialist to diagnose asthma based on Global Initiative for Asthma (GINA) or 20% drop in the FEV1 on methacholine test. Sampling was targeted and a total of 48 patients were selected randomly among the statistical society. Sample persons were divided into two groups as: test and control. All the patients filled demographic questionnaire. Type and dose of drugs were determined. Then, two groups were cloned according to Demographic characteristics and drugs use (based on age, gender, and severity of asthma symptoms). The patients included in test group were trained under 8 CBT sessions for 40 to 45 minutes once a week and individually (including presenting information about asthma, Jacobson progressive muscle relaxation, behavioral techniques and cognitive restructuring). Symptoms severity and frequency of asthma attacks in a week were measured at beginning of the study and after the sessions.

This was conducted based on Asthma Self-Efficacy Scale (ASES), Asthma Control Questionnaire (ACQ), Asthma Quality of Life Questionnaire (AQLQ) and Spirometry. Since interval to visit patients routinely is three months, in this interval no drug change was done. Data collected was statistically analyzed using SPSS version 16. If there seems improvement response in patients under, cognitive behavior therapy on control group patients will be done as well.

The inclusion criteria in the study were:

1. Asthma diagnosis based on Global Initiative for Asthma (GINA) or 20% drop in the FEV1 on methacholine test by internal medicine specialist
2. Age between 18 to 60 years old
3. Complete perception of Farsi language
4. Education: having at least 5th year degree of primary school
5. Mild to moderate asthma
6. Patient willingness to participate in the study

Exclusion criteria in the study were:

1. Mental retardation
2. Organic brain pathology (Ischemia, tumors, ...)
3. Some evidences of psychopathology
4. with occupational asthma
5. Having another more important simultaneous disease (e.g. Cardiovascular disease)
6. Obvious cognitive deficits (Such as dementia)
7. Using psychiatric drugs
8. Patients under treatment excluding psychiatric drugs

Results

Data was analyzed by help of SPSS software. As results show, mean age in experimental and control groups was 31.3 and 29.9 years old, respectively, where no significant difference was observed ($p=0.87$). Based on cloning in both groups, 14 participants were female. Mean attacks number during a week "ACQ" at pre-test in experimental and control groups was 1.74 ± 0.16 and

1.81±0.07, respectively, where difference between two groups was not significant by a difference of $\rho=0.41$. This is while "ACQ" mean attacks number during a week at post-test in experimental and control groups was 1.2±0.1 and 1.79±0.24, respectively, which was significant between two groups by a difference of $\rho<0.001$ [Figure 1]. Findings in "AQLQ" test show that mean grade in pre-test of experimental and control groups is 113±40 and 105±25, respectively, which is not significant by a difference of $\rho=0.08$; but, in post-test grade of "AQLQ" in experimental and control groups is 201±19 and 5.2±32, respectively, which is significant between two groups by a difference of $\rho<0.001$ [Figure 2]. Also "ASES" mean grade in pre-test of experimental and control groups was 223±21 and 232±17, respectively, which was not significant by a difference of $\rho=0.71$. "ASES" mean grade in post-test of experimental and control groups was 287±33 and 241±17, respectively, which was significant between two groups by a difference of $\rho<0.001$ [Figure 3]. These have been shown in Table 1. Another finding of present research is in concerned with number of days absence from work or school during research course where mean grade in experimental and control groups was 5.2±3.1 and 9.1±4.4, respectively, which was significant between two groups by a difference of $\rho<0.005$.

Discussion

There exist some evidences that maladaptive responses against stress may cause a disease and make hopeless feeling about the future.²⁷ Such at ought which is formed through complex mechanisms may result in physical problems and emotional depression and even it may cause to reduce responses of immunity system.³ Asthma is a respiratory disorder which is very prevalent entire the world. More than 12 million Americans (about 5 percent of the population) are with asthma.²⁸ Asthma is master of short-term debilitating diseases in US and causes to miss millions of working days where patients are in bed or are not able to perform their main usual tasks.²⁹

Once asthma attack is commenced, oxygen passing ways which are very sensitive would be very narrow and would cause a problem in breathe, such a problem can be sorted out through viral infections, air pollution, smoking, colds and emotional states; also, swelling of lung tissues can cause in increased mucus secretion and fluid accumulation in tissues.³⁰ Asthma attacks often happen consecutively i.e. daily or weekly or monthly. Asthma attack can indicate fear attack and panic which in turn enhances the asthma.³¹ Also, results demonstrate that stress can cause to commence Asthma attacks.¹⁷ Stress makes several changes in physical systems of body which can be effective on health. Some of physiological responses include hormones secretion especially catecholamines and corticosteroids using endocrine system during the stress.³² Increased Cortisol and Epinephrine is related with decreased activity of "T" and "B" cells against antigens. It appears that decreased activity of the lymphocytes in the development and progression of various infectious diseases.³³ The people who deal optimistically with general stresses, are less exposed by getting psychosomatic disorders and if they get the disorder, they will be improved easier.¹⁰

Only stress will not cause to make up unfavorable physical and mental effects but also the issue that how to deal with these stressors and which reaction they show is important and

determinant.³⁴ The individual belief to the ability to adjust or end a harrowing event would reduce the rate of stress caused by that.³⁵ So cognitive-behavioral therapy is about to modify or change behavior patterns which play a role in patients' problems and are of the most effective psychological interventions.³⁶ As mentioned above, Dahl in 1990 implied that using behavioral therapy plans including breathing individual management and plans to deal with fear can yield a better result in asthma improvement and effectiveness of this type of treatment is higher than conventional treatment of asthma solely.²⁰ Also in Studying of Paul Lehrer, clinical results were mostly equivalent: significant decreases of >50% in panic symptoms, clinically significant decreases in asthma symptoms and maintenance of clinical stability in asthma. The results of this study showed that cognitive behavioral therapy is effective in reducing asthma attacks. The difference is Significant between the experimental group and the control group in the number of asthma attacks. These results are consistent with the researches results of Dahl and Lehrer.

Further to this study, Grover²¹ addressed that patients with asthma who use cognitive behavioral therapy as complementary treatment of medicinal therapy will be improved in terms of asthma symptoms, anxiety and depression and such an improvement is higher than those merely use drugs. Also Quality of life has improved in the experimental group after the intervention period in the both researches of Grover and Lehrer. This study showed that cognitive behavioral therapy can also be effective in patients with asthma quality of life. The experimental group was taught the techniques of cognitive behavioral therapy that can better control their condition may be. Results from this study also confirm researches of Grover and Lehrer.

Ross CJ et al. in 2005, have shown that CBT treatment causes to improve asthma. It appears that cognitive treatments can be very effective in terms of mild to moderate anxieties.²² Using cognitive strategies can result in increasing influence treatment plans and asthma self-efficacy. another important finding of this study addresses that cognitive behavioral therapy can be effective on individual self-efficacy. This treatment enhances the individual ability to manage asthma symptoms and prevent from recurrence. So these results are consistent with the researches results of Ross CJ et al research.

Finally this research obtained results same as previous studies where one group was only under medicinal therapy (conventional treatment of asthma) and the another group used cognitive behavioral therapy as complementary treatment along with conventional treatment, the comparison between these groups show that cognitive behavioral therapy is very effective on number of asthma attacks and number of attacks (after completing the CBT training course) has been reduced within the week. Number of days absence from work or school due to asthma attacks is a great problems which can be debilitating in patients with asthma and follow other social problems.

Suggestions

The results of present research showed that cognitive behavioral therapy can play an important role to resolve this problem. If patients learn to use complementary treatments along with conventional and medicinal treatment, then they will be able to obtain better results and reduce

substantially enforced costs to community by preventing from disease recurrence. Asthma can be affected by stress, anxiety, sadness, and suggestion, as well as by environmental irritants or allergens, exercise, and infection. It also is associated with an elevated prevalence of anxiety and depressive disorders. Asthma education programs that teach about the nature of the disease, medications, and trigger avoidance tend to reduce asthma morbidity. Other promising psychological interventions as adjuncts to medical treatment include training in symptom perception, stress management, hypnosis, yoga, and several biofeedback procedures. There are many potential research avenues to consider in regards to the coexistence of asthma and anxiety. Future research should also consider 'big picture' studies, in which a number of different variables such as medication compliance, asthma self-management, quality of life, and lung function might all be examined in one investigation.

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Conflict of Interest: None declared

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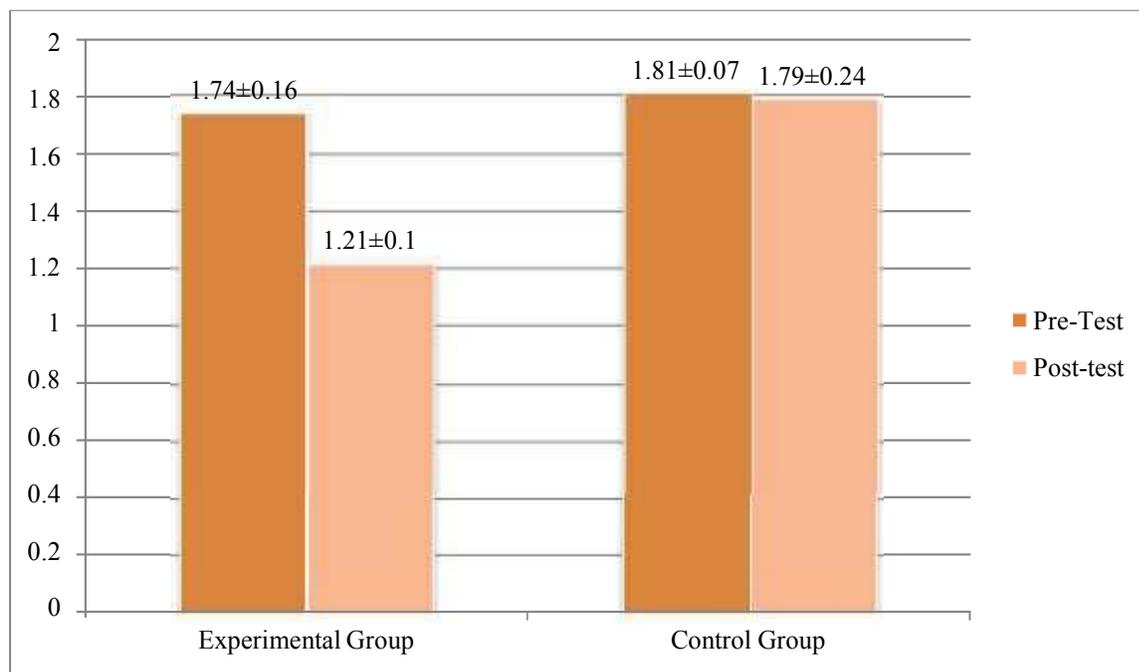
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Table 1: Mean of ACQ,AQLQ &ASES in experimental and control groups

| ACQ | | AQLQ | | ASES | | |
|-----------|-----------|-----------|----------|-----------|----------|---------------------------|
| Post-Test | Pre-Test | Post-Test | Pre-Test | Post-Test | Pre-Test | |
| 1.21±0.1 | 1.74±0.16 | 201±19 | 113±40 | 287±33 | 223±21 | Experimental Group |
| 1.79±0.24 | 1.81±0.07 | 171±32 | 105±25 | 241±17 | 232±17 | Control Group |
| 0.001 | 0.41 | 0.001 | 0.08 | 0.001 | 0.71 | P-Value |

**Figure 1:** Histogram chart of ACQ in experimental and control groups

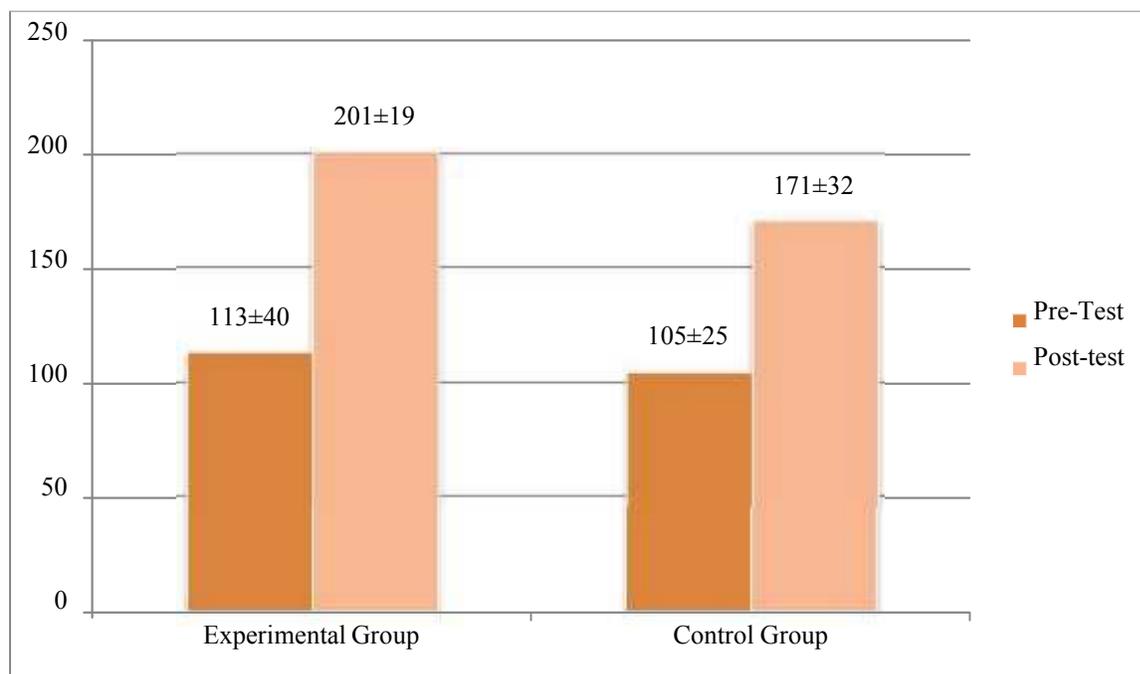


Figure 2: Histogram chart of AQLQ in experimental and control groups

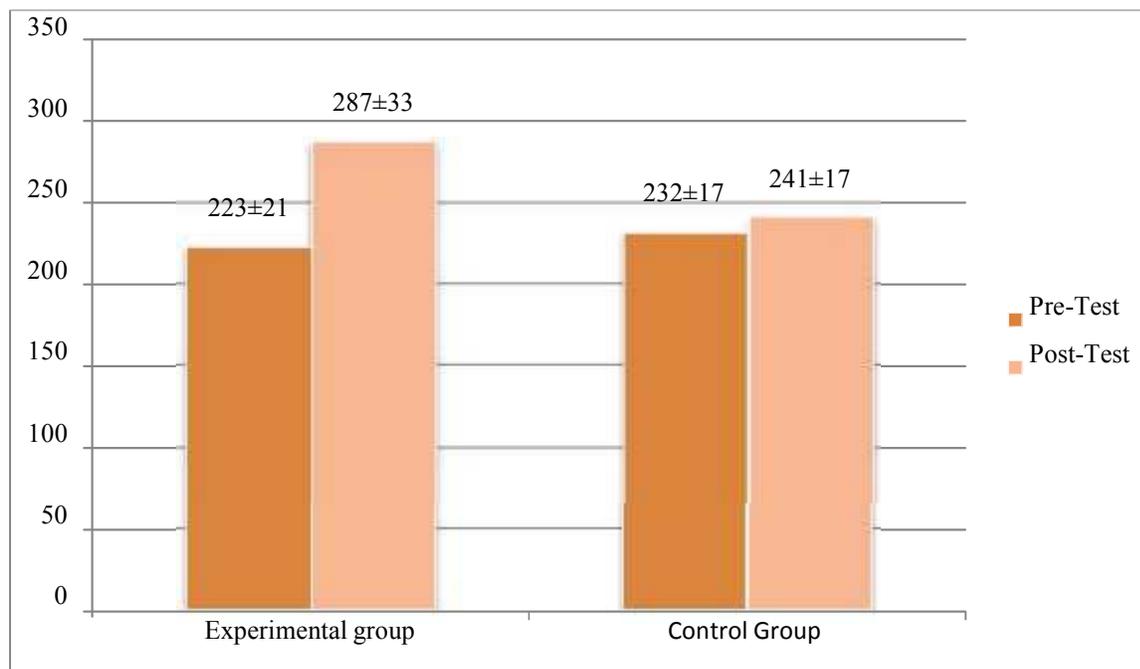


Figure 3: Histogram chart of ASES in experimental and control groups