

Effectiveness of Cardiovascular disease Specific Psychotherapy [CSP] on the stress, anxiety and depression of heart disease patients

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Abstract

Introduction: Cardiovascular disease is one of the greatest widespread disease and the prevalence of it is increasing worldwide. Our understanding of the role of psychological factors in the incidence of the cardiovascular system has rapidly increased in the past few years. The purpose of this study was to determine the effectiveness of cardiovascular disease specific psychotherapy [CSP] on the stress, anxiety and depression of heart disease patients.

Method: This research is a semi-experimental with experimental and control groups. To determine the number of the sample, at first, 30 participants from Rasol-e-Akram Hospital in Rasht were selected and were randomly assigned to two groups [cardiovascular specific psychotherapy] and control. DASS-21 scale were administered to both groups before and after training. Cardiovascular specific psychotherapy sessions were arranged for patients in 25 sessions twice a week for 2:30 hours. For controlling the intervention variable, multivariate analysis of covariance has been used in addition to descriptive statistics. Data were analyzed through spss.20 software.

Results: The results of MANCOVA showed that training significantly reduced the stress, anxiety and depression in the experimental group as compared with the control group.

Conclusion: Results showed the cardiovascular disease specific psychotherapy [CSP] effects on the amount of stress, anxiety and depression in heart disease patients and this method can be used with usual medical care in the improvement and rehabilitation in cardiovascular diseases.

The study is helpful for psychologists and other mental health professionals to help cardiovascular patients prevent the adverse effects of stress, anxiety and depression and is thus highly applicable to patients who have already become the victims of the stress related problems like anxiety and depression.

Keywords: Stress, Anxiety, Depression, Cardiovascular Diseases, Psychotherapy

Introduction

Cardiovascular diseases [CVs] is currently one of the most common chronic disease and is becoming a leading reason of morbidity, mortality, and disability in the world [1]. There are more than a few risk factors for cardiovascular disease and some of these risk factors, such as age, gender or family history, are unchallengeable. However, many significant cardiovascular risk factors are changeable by lifestyle and social change, drug treatment and prevention of hypertension, hyperlipidemia, and diabetes [2-4]. However, research has confirmed the importance of psychological risk factors as independent risk factors in the incidence and the course of CVs [5]. These psychosocial factors are depression, anxiety, stress [9]. psychosocial variables show connection with Cardiovascular diseases onset and length [6]. The presences of psychosocial risks

have an impact not only on the development but also on the recovery and of mortality. It is associated with the existence of adverse results in cardiovascular patients [7].

Stress upholding the prolonged changes in physiological functioning [8]. It is supposed that stress have significant effect on the biological response system and is related with poor lifestyle activities [9]. Anxiety has a substantial influence on the treatment [10]. Throughout recent years, there has been a growing agreement that depression is an important risk factor in relation to cardiovascular disease. There is both evidence display that depression is common after the onset of heart disease and some studies display that mood disorders increases the risk of developing cardiovascular diseases, when heart disease has become apparent [11].

Studies have documented that treatment of depression, anxiety and stress in cardiac patients reduces cardiac disease symptoms, and increases patients' morbidity and disabilities.

This article aims at describing the use of cardiovascular disease specific psychotherapy for patients with cardiovascular diseases focusing on the nature of the cardiovascular diseases, the interventions used in CBT. To do so, a literature review was accomplished searching www.ensani.ir, Irandoc, www.nlai.ir, Magiran, Noormags, Medlib, IranMedex, Science Direct, ncbi, Medline, SciELO and PsycInfo databases for references of the main articles found. According to a some studies psychological education for heart disease patients have positive effects on quality of life, mood disorders and physiological responses [12–16]. Due to the weakening nature of cardiovascular disease, the strategy for the treatment of these patients should take into account all facets of life, including social support, personality, stress and coping styles, emotional regulation and etc. The goal of the present study was to analyze the efficacy of cardiovascular specific psychotherapy which was based on cognitive-behavioral therapy on patients stress, anxiety and depression. Considering the results of the previously conducted researches and the issue that the cardiovascular specific psychotherapy has not been designed in, we attempted to plan the cardiovascular specific psychotherapy.

Method

This quasi-experimental study was conducted in one stage in 2015 on 24 patients with cardiovascular diseases divided into two groups of intervention [N=12] and control [N=12]. There was no drop out in both groups. The study population included all patients with cardiovascular diseases referred to The Cardiovascular Research Center of Rasol-e-Akram hospital, Rasht. The inclusion criteria were comprised of consent to participation, and lack of involvement in other similar programs and Psychiatric disorders. The diagnosis of cardiovascular disease was based on the: positive echocardiogram.

An introductory convention was held for the study participants and their closest associates in order to perform the pre-test and meet the study objectives, study

process, and the procedures of sessions. The patients were requested not to take part in any psychological intervention during this study.

Multivariate analysis of variance [MANOVA] was used to disclose the effects of treatments between the groups. Normal assumption was checked using the Kolmogorov-Smirnov test. The sample size was determined via Gpower software: [Effect size $f^2[V]=0.7$, α err prop=0.05, Power [1- β err prop] =0.95, Number of groups=2, Response variables=3, Total sample size=30] [17]. The therapy sessions were 18 sessions, three sessions per week and each session lasted for 2 hours in a group. Before and after intervention, the participants were asked to complete the DASS-21 questionnaire. The patients were asked to contact the researcher in the event of problems and the need for more information during the intervention period. Statistical analyses were performed using the Multivariate analysis of variance [MANOVA]. Finally, the studied variables were analyzed. The significance level determined to be equal to 0.05. The SPSS version 20 was used for data analysis.

The instrument engaged in the present study included DASS-21. The Depression, Anxiety, and Stress Scale [DASS-21] is a scale that measures depression, anxiety, and stress. The depression subscale measures bleakness, devaluing of life, self-criticism, and absence of interest/involvement, and inertia. The Anxiety subscale measures autonomic arousal, skeletal muscle effects, situational anxiety, and the subjective experience of anxiety. The stress subscale measures difficulty relaxing, nervous arousal, and being easily upset/agitated, irritable/over reactive, and impatient. *Soleimani* et al., [2015] reported Cronbach's alphas greater than 0.71 for all subscales, supporting the reliability of the Persian DASS-21 [18,19]. In addition to the DASS-21, a structured interview was used to gather demographic data, such as participants' age, gender, and married status.

In the present study, authors systematically reviewed all the papers in Iran which surveyed the causal effect of psychological factors that influence the onset and progression of cardiovascular diseases. Based on systematic review, a cardiovascular disease psychotherapy was designed. This short form psychotherapy includes all the psychological factors that influence the incidence, onset, severity and progression of cardiovascular diseases. The cardiovascular specific psychotherapy has been created based on cognitive-behavioral therapy. The program is designed for cardiovascular patients in small group formats. The treatment plan is held in twenty-eight 2:30 hour sessions. Every meeting begins with welcoming members of the group and reviewing prior meetings [10 to 15 minutes]. At the end of each session, all participants reviewed the session and practiced the tasks of the week [10 to 25 minutes]. During each session, one of the activities of the CSP was practiced, and extra activities were assigned to patients as their homework. There is no comprehensive psychological treatment for cardiovascular diseases. While, a few researchers, plan CBT based psychotherapy for chronic disease. It is said that there is a need to have a comprehensive and

multidimensional approach to chronic disease and that every disease needs its specific intervention which includes all facilitating and causal risk factors. Without comprehensive interventions to all causal risk factors, we cannot lead to good improvements in patients. This

manual is based on a cognitive behavioral treatment manual with some adaptations in order to address the psychological factors which does cause cardiovascular diseases. An overview of the program is shown below:

Table 2. The cardiovascular specific psychotherapy sessions and contents

Session	Content
1	Review symptoms, personal introduction; understanding the role of psychological factors on cardiovascular diseases; determining goals of the treatment, therapy commitment
2-3	Understanding type A, D and openness to experience, impact of personality on the expression, course, severity, and/or treatment response of cardiovascular diseases
4-5	Understanding hardiness and resiliency; cognitive appraisals, behavioral coping, social resources and health-promoting behavior, bio physiology
6-7	Short-term and long-term life objectives; well lifestyle, including physical activity, a healthy regime
8-9	Thoughts and behavior, the power of positive thoughts, assessment of negative opinions
10-11	Understanding coping styles and emotion regulation; problem solving techniques, training assertiveness and social skills
12-13	Understanding spirituality; personal growth, self-actualization, relation with god, altruism, meaning and reinterpreting of disease, praying and the role of it on health
14-15	Understanding social support; negotiation, problem solving, problem identification and active listening, tension reduction and relaxation technique; improved social support
16-17	Relaxation and how to use it, intimacy skills, describe the cognitive model of depression, explain cognitive-behavioral strategies
18	Termination; reviewing all treatment sessions and posttest

Results

Respondents' socio-demographic information contains age, gender, and married status. There was no missing value in the study. The mean and SD scores for stress, anxiety and depression are shown in table 1. The age of the participants' was between 29 and 42 years with mean age of 33.28 ± 2.57 years. Gender distribution were 67% males and 33% females. All the participants were married.

As seen in Table 2, the mean \pm SD of depression at pre-test and post-test phase for the experimental and control groups were 10.75 ± 1.54 ; 11.92 ± 1.51 ; 7.42 ± 1.31 and 11.1 ± 1.13 respectively. The mean \pm SD of anxiety at pre-test and post-test phase for the experimental and control groups were 10.42 ± 1.68 ; 11.25 ± 2.05 ; 5.75 ± 1.54 and 10.42 ± 1.38 respectively. The mean \pm SD of stress at pre-

test and post-test phase for the experimental and control groups were 10.83 ± 1.03 ; 10.17 ± 1.53 ; 7.58 ± 2.11 and 10.50 ± 2.23 respectively.

The MANCOVA [Multivariate Analysis of Covariance] statistical analysis was used during this study. This is because the pre-test data was co-variant, while the post-test data was variant, hence, the statistic is able to analyze the score differences of each dependent variable in Cardiovascular Specific Psychotherapy group and the control group. In checking-out the status of stress, anxiety and depression based on the obtained data from the two groups, the MANCOVA showed significant difference in the mean score for stress, anxiety and depression between the two groups after the intervention [$P = 0.00$, $Pillai's Trace = 0.822$, $F = 26.16$, $Eta = 0.822$] [table 2].

Table 2. Mean and SD of stress, anxiety and depression in experimental and control groups at Pre-Test and Post-Test

Variable	time	Experiment	Control
		Mean \pm SD	Mean \pm SD
Depression	Pre-test	10.75 ± 1.54	11.92 ± 1.51
	Post-test	7.42 ± 1.31	11.1 ± 1.13
Anxiety	Pre-test	10.42 ± 1.68	11.25 ± 2.05
	Post-test	5.75 ± 1.54	10.42 ± 1.38
Stress	Pre-test	10.83 ± 1.03	10.17 ± 1.53
	Post-test	7.58 ± 2.11	10.50 ± 2.23

Table 3. The results of MANCOVA on the scores of stress, anxiety and depression of two groups in the post-test

Variable	SS	df	MS	F	Sig	Eta
Depression	54.53	1	54.53	34.40	0.00	0.64
Anxiety	89.95	1	89.95	39.68	0.00	0.67
Stress	47.06	1	47.06	26.45	0.00	0.58

However according to Table 3, after carrying out the cardiovascular specific psychotherapy [CSP], the mean score for stress [$F = 34.40$], anxiety [$F = 39.68$] and depression [$F = 26.45$] measured in posttest in the intervention group was significantly lower than that in the

control group [$P < 0.001$]. Based on the results, it can be concluded that the CSP has significant consequence on the main dependent variables which were the stress, anxiety and depression among the participants.

Discussion

The goal of this research was to examine the effectiveness of cardiovascular specific psychotherapy [CSP] in decreasing stress, anxiety and depression of cardiovascular patients. The results displayed that CSP, reduced stress, anxiety and depression in the cardiovascular patients in the intervention group. No research was found to study the effectiveness of CSP on cardiovascular patients. This is while our findings is consistent with the results of similar studies such as [20–23] confirming the effectiveness of psychological interventions in reducing the psychological and somatic symptoms in cardiovascular patients. The cardiovascular specific psychotherapy [CSP] is based on the cognitive behavioral theory and is a treatment procedure which combines the cognitive processes and behavioral tactics to achieve cognitive and behavioral modifications in cardiovascular patients.

The cardiovascular specific psychotherapy [CSP] provides new cognitive and behavioral coping skills which may lead to success in overcoming internal and external stresses. The background of the cardiovascular specific psychotherapy [CSP] is cognitive behavioral therapy. The CSP assumes that automatic negative thoughts has correlation with anxiety symptoms. Through strategies to release anxiety, the patients are more able to be exposed to escaped conditions and therefore, recover their quality of life, overcoming everyday life stressors. These change can lead to better social relations and quality of life [24]. According to the cardiovascular specific psychotherapy [CSP], anxiety arises from inaccurate interpretations of physical symptoms. CSP of anxiety is founded on the cognitive behavioral theory that say the disorder stems from continuous insights of the world as a dangerous home, resulting in a procedure of maladaptive and usual interactions among cognitive, behavioral, and biological response systems [25,26].

It can be stated that CSP have cognitive and behavioral skills and even some mechanisms of this plan programs serve to aim emotion dismanagement. For example, relaxation is used to decrease a patient's biological reaction to anxiety. Since relaxation allows cardiovascular patient to modify their biological arousal, it may serve as an emotion regulation strategy, which decreases the excitement. The cardiovascular specific psychotherapy [CSP] decreases negative cognitive coping in cardiovascular patients and increases effective coping after treatment. Cognitive coping is another valuable psychological construct that is correlated with depression and sadness [27,28]. Maladaptive or excessive uses of negative cognitive tactics contribute to the progress and perseverance of anxiety. The cardiovascular specific psychotherapy [CSP] focus on modifying the cognitive [e.g., maladaptive thinking patterns] and behavioral [type A, D personality, emotional coping style,...] and helps cardiovascular patients to identify somatic aspects of stress, anxiety and depression and to develop a plan, as well, to cope with stress, anxiety and depression provoking situations. Patients put on the skills in real-life situations to gain mastery over their stress, anxiety and

depression. Results of the several study revealed that anxious patients demonstrated greater intensity and frequency of negative cognitive and emotional responses. These patients had less capability in assessing negative emotional circumstances and more reliance in emotion management policies, in which the risk of functional impairment and intense negative emotion is increased. Furthermore, these patients perceived themselves as less able to cope with emotionally insulting circumstances successfully. They showed less adaptive coping through involvements of negative emotions compared with the healthy individuals [13,14].

Incorrect breathing patterns lead to hyperventilation and biological symptoms resulting from significant increase in blood oxygenation, dizziness and tachycardia. Muscle tension also plays a role in increasing anxiety and may also lead somatic responses such as pain. These sensations can be reduced using appropriate breathing methods and muscle relaxation. Diaphragmatic breathing is a method that uses stomach muscles for breathing control. Progressive muscle relaxation is an exercise including practice of tension and relaxation of the core muscle groups. Both methods can be experienced in sequence or independently, especially in situations in which there is anticipatory anxiety. Nonetheless, there is evidence that these anxiety coping techniques are not a necessary element of treatment and there is worry that, these methods may lead persons into confused efforts to control anxiety. It is the elimination of these fears that is the central focus of both cognitive and interceptive exposure interventions [28,29].

Distorted and catastrophic interpretations of physical sensations of stress and anxiety are common in cardiovascular patients, as well as patient's beliefs about hopelessness and inability to manage anxiety and stress [30]. Cognitive therapy aims at restructuring such catastrophic thoughts. To do so, it is important for the patient to know the basic expectations of the cognitive model and cognitive therapy. They should really know the thoughts influencing emotions and behavior, and anxiety and chronic stress can be a result of biased understandings of somatic senses. In treatment, patients are asked to treat their thoughts as hypotheses or "guesses" about the world. Teaching is given in recognizing overlearned disastrous thoughts linked to stress, anxiety and depression [21,22].

In summary, our study and the other noted research suggests that a healthy life style such as greater levels of exercise, not smoking and light to moderate alcohol consumption can prevent CSP. Patients who are mentally in a more optimal condition have more motivations to carry out healthy behaviors. This psychological health is strengthened by being with family and friends. CVs patients who have the assistance of social support have a higher quality of life and are less vulnerable if they experience negative incidents.

Furthermore, adequate sleep is a major factor of health in patients with chronic diseases. CVs patients, due to their disease have numerous problems with sleeping [10]. Determining regular hours for sleeping, having a daily

program for walking, healthy eating can promote the quality and quantity of sleeping. Furthermore, stress managing is vital for supporting long term healthy behavior patterns [6]. It is difficult to remove. Recognizing stimulants, meditation, good breathing, doing regular exercise, listening to music and reflective journaling are different ways to manage stress.

Conclusion

In many areas, psychology has found its exceptional role mixing its information and practice into traditional medicine. Nowadays psychological factors are considered as strong and independent risk factors for disease, but typically are not known in the clinical practice. Then bio-psycho-social model is more beneficial treatment rather than one dimensional models. One of the limitations of this study was the fact that the data were collected through self-reporting tools. Also the sample population was only one hospital. Therefore, we can't generalize the results to other populations.

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