



The Comparison of Cognitive Emotion Regulation Strategies, Positive Affect and Negative Affect in cardiac patients and healthy subjects

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Abstract: Psychological interventions along with the treatment of heart disease, is essential, therefore, the present study compared the cognitive emotion regulation strategies, positive affect and negative affect in cardiac patients and healthy subjects. This study was a comparative cross-sectional study. To conduct this study, 50 subjects were selected in an available sampling form, from among cardiac patients (coronary artery type) referring to the medical center of Imam Ali in Kermanshah, and 50 individuals who were attendant with the patients and didn't have heart disease, were selected for comparison. For collecting the data the cognitive emotion regulation questionnaire and positive and negative affect scales were used. For data analysis, multivariate ANOVA, version 16 SPSS statistical software was used. Results showed that in all cognitive emotion regulation strategies, there was a significant difference between the two groups of in cardiac patients and healthy subjects, the results also indicated that the mean differences are significant in both groups in positive affect, but the mean differences was not significant in negative affect in the two groups. Regarding the results of the study it can be concluded that that having poor emotion regulation strategies is a risk factor for developing heart disease.

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1. Introduction

Anxiety, depression, types A behavior, hostility, anger and acute psychological stresses are considered among the risk factors for the rise of coronary heart disease (CHD). Moreover, psychiatric disorders such as anxiety and depression, cognitive disorders commonly seen in people with heart disease. Studies of cardiac outpatient with the confirmed heart disease shows that the prevalence of anxiety disorders is about 5 to 10 percent in them. Also, major depression can be seen in 15 to 20 percent of patients following infarction (1). Totally, the psychological stresses have a role in the onset and progression of coronary heart disease (CHD), and the recent studies have considered the role of anxiety and depression as an independent risk factor on cardiac patients' deaths (2). Emotion is one of the most

important variables related to heart disease, positive affect indicates that how much a person is passionate to live and how much he feels active and aware. But the negative affect suggests a general inner discomfort and unpleasant job and include unpleasant moods such as anger, hatred, resentment, guilt, fear and nervousness (3). Indeed, the positive affect includes positive emotions (such as pleasure, mirth, satisfaction, pride) and negative affect includes negative feelings and emotions (such as guilt, shame, sadness, anxiety, anger and stress) (4). Research evidence shows that the problematic regulation of the emotions (including anger and anxiety) has a major role in physical illnesses such as cardiovascular diseases (5).

Many researches have been conducted about the effect of Type A, and heart disease. The results were

inconsistent; therefore, some kind of meta-analysis was conducted to study the definite relationship of this personality type. The results showed that the type A behavior is not associated with cardiovascular disease (6). According to these results, Denollet attempted to introduce other character type that can be associated with heart disease, hence Denollet (7) used the scl-90 questionnaire and the Marlowe Crown's questionnaire of Social Acceptance on a number of cardiac patients and after the factor analysis, two subscales of negative emotions (anxiety, depression) and social inhibition were extracted. Denollet named this scale as the "D characteristic". The subscale of Social inhibition implies the prohibition of emotional expressions in social relations and the avoidance of verbal and nonverbal communication with others. Individuals who have high score social inhibition subscales might not be able to succeed in communicating with people (8).

According to the model of Gross (2001), regulation of emotion includes all conscious and unconscious strategies that are used to increase, maintain or reduce the emotional, behavioral and cognitive components of an emotional response (9) and also refers to the ability to understand emotions, experience adjustment and expressing emotions (10). Research has shown that emotion regulation problems are higher in people with post-traumatic stress disorders (11). Training emotion regulation means as reducing and controlling positive and negative emotions of excitement. Results indicated that group training of emotion regulation, has a positive impact on reducing self-damage, lack of emotion regulation and specific symptoms of borderline personality disorder and reducing symptoms of depression, anxiety and stress (12). According to various studies, the emotion regulation causes an improvement in physical health in addition to its positive effects on emotional well-being (13, 14). In some studies it has been indicated that the problem of emotion regulation causes physical problems (15). Emotional inhibition is considered as a negative strategy in regulating emotions, lead to cardiovascular diseases (16) and the cognitive reevaluation of emotions as positive emotion regulation strategy leads to the reduction in blood pressure (17).

Emotional experiences play a major role in various aspects of life such as coping with life changes and stressful events. Basically, emotional responses can be considered as biological reactions to the conditions which we consider as important or challenging opportunity, and these biological reactions are along with the response we give to those environmental events (18). Emotional responses provide important information about the individual's experience in conjunction with others. With this information, the individuals learn how to behave when confronted with emotions; how to state emotional experiences verbally;

which strategies to use in responding to emotions and how to behave with others in the field of specific emotions. Many theorists in the field of psychopathology in explaining mental disorders, have a different distinction for emotions. Nowadays, regardless of hybrid models, most cognitive theories have also found out the highlighted role of emotions in the development and persistence of psychiatric disorders, so that many of them know emotions as parallel with cognitions in causing mental disorders and have moved towards the cognitive/emotional models. Among these models we can refer to Greenberg's emotion focus therapy model (EFT) (19), cognitive interpersonal approaches (20), metacognitive pattern of emotions (21) and the emotional schemas model by Leahy (22 and 23).

Although emotions have biological basis, individuals are able to affect the ways which express these emotions. These abilities are called as seeking order, and include internal and external processes which have the responsibility for monitoring, evaluating and changing emotional reactions in the realization of his goals (24). The order-seeking of excitement, is considered as a fundamental principle in beginning, evaluating and organizing the adaptive behavior and also preventing negative emotions and maladaptive behaviors is (25). Literature review of psychological texts indicates that excitement order-seeking, is an important factor in determining health and having a successful performance in social interaction (24, 25) so that the ineffective order-seeking veins of emotional experiences is evident in all psychological disorders. For example, the schizophrenia disorder, involves extreme and uncontrollable excitement; neuroticism is dependent on anxiety; anti-society, is rooted in the lack of overt emotion and even mental retardation is considered as emotional retardation (10). Furthermore, the recent reviews indicate that emotional malfunctioning in all disorders of axis I and most of the disorders of axis II occur more (26). Structure of order-seeking excitement is a complex concept that includes a wide range of biological, social, behavioral and cognitive processes and also alert and unconscious cognitive processes (27, 9) and refers to their ability to understand, modification and expressing the emotional experiences (10) or decreasing, maintaining and increase (28, 29). Any problem and deficiency in emotion regulation can make an individual vulnerable to mental disorders such as depression and anxiety (30). Thus, it can be concluded that order-seeking emotion, is a key determinant of mental well-being, effective functioning, adapting with stressful life events and quality of life. Emotion order-seeking, as one of the psychological factors, has been taken into account by many researchers (31).

According to the studies, one of the factors affecting the increase in heart disease are emotions such as anger and negative emotions like hostility, the presence of these emotions and excitement, even in cardiac patients exacerbates the disease, so we can help preventing or curing cardiac patients by identifying positive and negative emotions, and examining the role of emotion regulation. However, the results are inconsistent in this case, some studies didn't find any relationship between the factors such as hostility, anxiety, and competing, therefore, it is important to do new researches in this field and this research can be useful in this regard.

Therefore, it seems that the identification of emotions and the way of regulating emotions in cardiac patients is of great importance, thus, the present study sought to answer the questions that in what level are the positive affect and negative affect in cardiac patients and how are they different with non-patients? And how is the emotion regulation different in patients with non-patients?

2. Material and Methods

This study is a case-control study. The study had two populations, the first population of the research consisted of all patients with a cardiac disease (of a coronary artery type) who referred to the medical center of Imam Ali in Kermanshah in spring 2013 and had been diagnosed to have heart disease, by the specialist. These people had visited for the first time to have heart disease and those who had two or more visits were excluded from the study. The second population consists of all individuals accompanying the patients visiting the medical center and according to the doctor, are not afflicted to any certain heart disease. The two groups were matched in terms of genetics, age and gender. In some cases, due to the heterogeneity of the patient and the accompany, a family member or a patient's relative who was match in terms of age and sex, was invited to fill the questionnaire of the study.

To conduct the study, two samples of 50 individuals were selected in an available sampling method. At the end; the analysis was performed on 100 person (50 cases (25 male, 25 female) and 50 controls (25 male, 25 female. mean age was 51.46 (12.01) and 49.9 (11.81) in cases and controls respectively.

After adjusting the questionnaire and selecting the examinees, they were given the questionnaires. Then the necessary descriptions on how to fill the questionnaires were presented to the participants. The subjects were told to ask for more explanation from the researcher if they confront a problem. The selected

individuals started to fill the questionnaires after acclaiming their consent to participate in the study and received the consent to ensure that their information will remain confidential. The text was read by the researcher for the illiterate ones. After completing the questionnaire by the subjects which was individually and in the presence of the researcher, the questionnaires were collected. For data analysis, multivariate ANOVA version 16 SPSS statistical software was used.

Instruments:

1 - Positive affect and negative affect scale (PANAS-X):

A long list of positive and negative affect (PANAS-X, Watson and Clark, 1994) is a 60-item self-report test that measures 4 major scales of negative emotions (fear, hostility, guilt, and sadness) 3 major scales of positive emotions (happiness, self-confidence and precision) and 4 other emotional states (shyness, fatigue, calmness and surprise), in addition to measuring the two major factors of positive and negative affect. The items are single words that the subject reports his experience of them on a five-point scale (1 = Not at all) - (2 = low) - (3 = moderate) - (4 = much) - (5 = very much). The providers of the test use 8 different time orders: now, today, during the last few days, a few weeks ago, last month, last year and generally to assess the state affect and attributive affect. For the compliance of the test with the trait or state form the guidelines should be modified on the state related manner (how do you usually feel?) or trait-related manner like (how do you feel today?). That is, the respondents will be asked to recall his affect generally or in specific intervals. Regarding the purpose of this study was conducted by the instructions (this list includes some of the words that describe different feelings and emotions. Read each set of words and identify that over the past few weeks, how much have you had these feelings and emotions).

In a research by Mohammadi et al. (2012) which aimed on the translation and Farsi standardization of the questionnaire, the internal consistency coefficients of (Cronbach's alpha) were respectively obtained for the instruction "now" between 0.72 to 0.93, with the instruction "last week" between 0.74 to 0.90 and the instruction "last year" between 0.74 to 0.90, respectively (32). In the study by Watson and Clark (1994) with a character guideline, Cronbach's alpha for the positive affect and negative affect was respectively reported between 0.83 to 0.90 and 0.85 to 0.93 (32).

Table 1. The mean and standard deviation of positive and negative emotions and cognitive emotion regulation strategies and t-test for comparison between groups in both cardiac patients and healthy subjects

Variable	cardiac patients	Healthy subjects	t	p-value	
	M (SD)	M (SD)			
Cognitive Emotion Regulation Classifications	positive refocusing	27.64 (6.24)	37.78 (6.61)	7.88	0.000
	positive reappraisal	16.34 (3.14)	20.38 (4.63)	5.1	0.000
	other-blame	15.64 (3.11)	11.6 (3.98)	5.64	0.000
	self-blame	9.82 (2.76)	6.26 (3.03)	6.13	0.000
	rumination	12.66 (2.68)	16.2 (3.44)	5.73	0.000
	catastrophizing	12.24 (3.16)	10.38 (2.94)	3.04	0.003
	Acceptance	9.7 (2.56)	11.78 (3.45)	3.41	0.001
	Positive Affect	67.28 (19.72)	78.26 (17.92)	2.91	0.004
	Negative Affect	91.68 (21.77)	88.9 (23.11)	0.62	0.537

2 - Cognitive Emotion Regulation Questionnaire (CERQ): is a questionnaire of 36 items which was prepared by Garenfesy et al. (2002). The questionnaire is used to identify the cognitive emotion regulation of individuals (or cognitive strategies) after experiencing negative events and situations. Unlike other questionnaires that do not differentiate between the individual's acts and thoughts, this questionnaire assesses what people tend to think about during and after experiencing threatening events. The Cognitive Emotion Regulation Questionnaire contains 9 distinct subscales that some of the cognitive emotion regulation strategies and cognitive strategies, some of which are negative or non-adaptive self-blame, rumination, and other-blame. Other strategies are positive or adaptive that include Acceptance, positive refocusing, refocus on planning, positive reappraisal, Putting into perspective. Each subscale consists of four elements, which range from 1 (almost never) to 5 (almost always). The higher the score of a subscale, the intended cognitive strategy is used more. To assess the reliability of this questionnaire Garenfesy et al. (2002), calculated internal consistency of the 9 subscales of the questionnaire using Cronbach's alpha coefficients. The Cronbach's alpha coefficient for the subscale of self-blame 0.81, accepted 0.80, rumination, 0.83, positive thinking load, 0.81, refocusing on planning, 0.81, refocus on planning, 0.72, Putting into perspective 0.79, catastrophizing 0.71 and other-blame 0.68, which all indicated a good reliability of the questionnaire. They also calculated the test-retest reliability of the subscales in a 14-month period. Results indicated that test-retest correlations range between 0.48 (refocus on planning) and 0.65 (other-blame). This questionnaire has been standardized by Samani and Sadeghi (2012) (33).

3. Results

As shown in Table 1, the mean strategies for positive refocusing, positive reappraisal, rumination and acceptance is higher than the cardiac patients and in the strategies of other-blaming, self-blaming and catastrophizing of cardiac patients' mean is higher than the healthy individuals. In the positive affect also, the average of healthy people is more than the cardiac patients. The results also indicate that for examining each of the variables between two groups t-test was used so that the results showed that in all cognitive emotion regulation strategies, there is significant difference between the two groups of cardiac patients and healthy individuals, the results also indicated that the mean difference between the two groups is significant in positive affect but in negative affect there is no significant difference between the two groups.

4. Discussions

Annually, about 20 million people in the whole world survive a heart attack, and majority of them need expensive care. The cost of heart surgeries and also rehabilitation costs are increasing day by day. The disease occurs in people who are at the age of economical productivity and efficiency, on the other hand, thousands of days of absence from work due to coronary artery disease may also cause damage to work and production, thereby causes the increase in the economic burden of illness to the society. As the psychology services and counselling and cognitive therapies are as the general principles rehabilitating coronary artery patients, the use of psychological treatments along with medical and surgical treatment of cardiac patients seems essential. Studies show that the phenomenon of cognitive mechanisms leads to emotional disorders and subsequent cardiovascular or heart attacks or sudden death. The creation of a state of anger, stress and fear are the causes of intense and sometimes uncontrollable excitements. So far, several

researches have been done on the impact of negative emotions such as fear, depression, anger and hostility on heart, the present study, therefore, was conducted for the purpose of comparing the cognitive emotion regulation strategies, positive and negative affect in cardiac patients and healthy subjects. The results indicated that positive refocusing strategies, positive reappraisal, rumination and acceptance was higher in the healthy group than the cardiac patients, and in strategies of blaming others, self-blame and catastrophizing, the average of cardiac patients is higher than the healthy individuals and the in positive affect, the healthy subjects are more than the cardiac patients. The results indicated that there is no significant difference in the negative affect of cardiac patients and healthy subjects.

In our search we have not found research that has been done on this subject, but some studies like the research by H. Pahlavan, Qarakhani and Mahjoub (2008) which was conducted in two groups, a group composed of 102 individuals with acute myocardial infarction and a group of 162 non-patients indicated that there is significant difference in hostility (34). But the results of this study indicated that there is no significant relationship between type A personality and risk of coronary artery disease. In a research by Day et al. (2005), the results indicated that patients with depression and anxiety, their negative emotions are effective in the outbreak of heart disease, and according to the patients, their mental state is effective in the formation of heart disease (35). In fact, we can say that the results are inconsistent with the results of previous researches.

Gross indicated in his own theory that individual differences in using different styles of cognitive emotional causes emotional, cognitive and social consequences. For example, the use of reappraisal styles is related to positive emotional experiences and better intrapersonal practices and higher well-being (15). Mashhadi, Mir Dorogi and Hasani indicated that there is a positive correlation between the symptoms of anxiety and depression and self-blame strategies, rumination, catastrophizing and blaming others, whereas this relationship is positive for refocusing strategy, and negative refocusing on planning and acceptance (36). Overall, the research literature indicates that individuals who use poor cognitive strategies such as rumination, catastrophizing and self-blame, are more vulnerable to emotional problems, than other people, while those with optimal strategies, such as positive reappraisal, are less vulnerable (37) and self-blame strategies, catastrophizing and positive reappraisal are among the strong predictors of negative emotional experiences (38). Thus, the present findings support the assumption that people with heart disease, use inconsistent

strategies to deal with life problems and negative events and the vulnerability of aspects of pathology is high in them, it can be said that these strategies are adverse risk factors for cardiovascular disease.

Results of the research by Issazadegan et al (2012) which was entitled the relationship between cognitive emotion regulation strategies and emotional health indicated that there is a relationship between emotional regulation and public health and its components in the students (39). Cognitive emotion regulation strategies appear to be a critical factor in health. It is believed that cognitive emotion regulation strategies help people to regulate arousal and negative emotions (15, 40,41) and optimal utilization of cognitive adapted discipline strategies such as the of reappraisal causes a decrease in negative emotions and an increase in positive feelings and adaptive behavior (42,43). In general, a number of research findings indicate a strong relationship between cognitive emotion regulation with emotional behavioral disorders (42-44) and psychopathology (26, 15, 45-46). Furthermore, the research results show that effective emotion regulation has desirable outcomes in mental health, psychological well-being, physical health and interpersonal relationships (47-48).

The results of the study showed that positive affect on heart patients are less than non-patients, studies have shown that positive affect through strengthening the immune system plays a role in improving health. Positive affect includes the tendency to conflict and confrontation with the environment, such as the social environment. People live up to life with high positive affect, actively, strongly, with passion, joy and confidence, like to be along with others and enjoy it, and have trust and satisfaction in their social interactions. These people like dramatic experiences. On the other hand people with low positive affect, have lack of energy, enthusiasm and confidence. They are introvert and unsociable, avoid passionate experiences and are totally doubtful about active engagement with the environment.

However, the results showed no difference in negative affect between patients and healthy subjects. Some other studies (6) have reached such a finding, as I mentioned before the results of the researches in this area are inconsistent.

According to the results, we can say that having poor emotional regulation strategies, is a risk factor for cardiovascular diseases, therefore, it is suggested to help the health of the population by the recognition of emotion regulation strategies in people and correcting them in this context. In generalizing the results we should be cautious because this study was conducted among patients who have referred for treatment of their disease, therefore, future research should be done in the broader community.

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