Original Article

Mental Health and Stressful Life Events in Coronary Heart Disease Patients and Non- Patients

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Objective: The main goal of this study is to compare stressful life events and mental health in coronary heart disease (CHD) patients and non-patients.
Method: In this research, 120 participants (n=68 male, n= 52 female) were divided into two groups of patients (n=60) and non-patients (n=60). They were selected from Vali Asr Hospital of Meshginshahr (Iran) and completed the General Health Questionnaire (GHQ) and Stressful Life Events Inventory .
Results: Data was analyzed using independent t-test. The results showed significant differences between CHD patients and non-patients in mental health and stressful life events. CHD patients showed high rates of physical symptoms and anxiety of GHQ .
Conclusion: CHD patients reported more stressful life events. Therefore, it can be inferred that psychological factors are important in coronary heart disease.

Key Words:
Coronary arteries disease, Life change events, Mental health, Psychological stress

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Psychological factors play a very important role in the existence and formation of Heart diseases, especially Coronary Heart Disease (CHD). Nowadays, heart diseases especially CHD which its clinical spectrum varies from silence ischemia to stable angina, unstable angina, myocardical infaction and sudden heart death is one of the three main causes of death in the industrial countries besides cancer and brain stroke. Fifty million people die annually around the world ; 12 million of them die because of cardiovascular diseases(1).

In the past forty years, mortality due to CHD was decreased using preventive and curing methods. However, CHD is still considered as a serious danger to life and health of human beings and has been the main cause of death in most of the developing countries up to this time. A glance at statistics confirms the importance of confronting this disease. Therefore, gathering information about new developments on etiology, prevention, therapy, and identification of its psychological consequences seems necessary (1-3).

The psychological factors which increase the danger of suffering from CHD include Lack of social support, social isolation, personality variables, life stresses like job anxiety, and particular life styles (4, 5).

Stress is a predicative factor in CHD and many studies have been conducted on this issue (5, 6). Stress (negative life events) refers to conditions or events experienced by people during their lives that are not compatible with their current abilities and facilities and therefore it causes anxiety and psychological opposition (7). Acute and sudden psychological stresses and chronic stresses have harmful effects.

Heart beat is increased in the first month after losing a loved one. Moreover, cardiovascular symptoms are increased after natural accidents and between citizens who have experienced war or enemy attacks (5). Recent studies have concentrated on stress, its role in intensifying heart diseases and on different ways individuals try to confront it. Enmities, facing chronic stresses, and heart reactions have great effects on the intensity of CHD. In addition, chronic stress, negative affection, and sudden increase in activities can have sudden clinical consequences such as heart attack. Reaction to stress or confrontation with it through enmity may increase the probability of the risk of suffering from CHD through affecting other dangerous factors like high level of Cholesterol.Many reports have shown the relationship of stress, especially emotional stress, with sudden heart deaths. For instance, after an earthquake in California, it was established that emotional stress was a speeding factor in about 40 percent of sudden heart deaths (8). Moreover, findings of a study in Australia showed that stressful life events and insufficient social support were hazardous factors in CHD (9). Moreover, finding of Mousavi et al. (10) showed that CHD patients had experienced more negative events in their lives than the control groups.

Mental health specialists believe that individuals' reaction against stressful events and the amount of stress produced by such events are influenced by social and individual factors. People who endure stressful life events have the following characteristics: tenacity, hopefulness, optimism, continuity feeling, creative thinking and social support (6, 11-13). All of these factors are dependent variables to mental health.

Considering the relationship between variables related to mental health, vulnerability to psychiatric disorders, and stressful life events with CHD, this study aims to identify and evaluate the role of mental health and stressful life events in CHD patients and non patients.

Materials and Method

Participants

In this research, 120 participants (n=68 male, n= 52 female) were divided into two groups of patients (n=34 male, n= 26 female) and non-patients (n=34 male, n= 26 female).

Patients who were hospitalized for coronary heart angiography or those who decided to do angiography after hospitalization in Valie Asr Hospital of Meshkinshahr, Iran, were selected for this study. The participants consisted of stable angina and unstable angina patients and patients who had experienced a heart stroke before and were hospitalized in the surgery unit of the hospital (except special care unit). Sixty patients were selected using availability sampling. Patients with sever conditions such as heart failure, sever pain and fever, and patients who were not able to complete the questionnaires were excluded from this study.

Instruments

Both groups completed General Health Questionnaire (CHQ-28) at the beginning of the study and then they filled Paykel Life Events Inventory. A break was given to the participants when they were tired. Incomplete questionnaires were not considered in this study.

General Health Questionnaire-28: This scale consisted of 7-item measures of depressive symptoms (e.g. 'Feeling/thinking that life is entirely hopeless' [item 23]), anxiety symptoms (e.g. 'being scared or panicky for no good reason' [item 12]), social dysfunction (e.g. 'Been taking longer over the things you do' [item 16]) and somatic symptoms (e.g. 'Been feeling run down and out of sorts' [item 3]). The scale demonstrates satisfactory reliability and validity across a number of samples (14).

The reliability and validity of the questionnaire have been examined. In Iran, Tagavi (15), studied this questionnaire's validity using test-retest, split-half, and Cronbach's alpha method. Validity coefficients of 0.72, 0.93, and 0.90 were obtained respectively.

Paykel Life Events Inventory: This questionnaire involves 65 important life events. It is used to evaluate stressful events and the amount of experienced stress in life. Participants are asked to identify the amount of experienced stress regarding stressful life events based on Likert's five measures scale. The maximum score for each subject in the number of stressful events is 65 and the minimum score is 1. Moreover, the maximum score for each subject in the amount of stress is 244 and the minimum score is zero. Considering its comprehensiveness and reliability compared to other tests and questionnaires, this questionnaire has more efficiency and effectiveness. Studies done on normal and depressed participants reported high reliability and validity for this questionnaire (16). Pourshahbaz used this inventory to evaluate the amount of stress in patients who suffered from blood cancer. He reported reliability coefficient of 0.78 through test-retest method for the number of events and 0.82 for the amount of stress(16). Hosseini Gadamgah used this scale to evaluate the amount of stress in CHD patients and obtained reliability coefficient of 0.72 for this scale in the number of stressful events and 0.73 in the amount of experienced stress using test- retest method (16).

Procedure

The researcher contacted the possible participants at the heart ward of the hospital and asked them to participate in the study; and if they agreed, then the researcher arranged to administer the questionnaires in a private room in the hospital. Considering the physical and psychological conditions of the patients, their low education, and the length of questionnaires, the researcher read the questions for each patient and recorded the answers. The non patient group was selected from the visitors of patients in the hospital. The two groups were matched for the demographic characteristics (age, gender, marital status, and education). Necessary explanation about filling the questionnaires and the research goals was given to the non patient group.

Analysis

Data was analyzed using SPSS (version 12). Comparisons between groups were made using the independent t test.

Results

The mean age of the patient group was 43 and the mean age of the non patient group was 42. In each group 3 people had a high school diploma, 57 were under diploma, 4 were single and 56 were married.

General health was studied in the patient and non patient groups using independent t- test. Findings are shown in Table 1. Findings show that there is a significant difference between the two groups with respect to general health. In other words, CHD patients had significant lower physical functions in comparison with the non patient group. Moreover, the patient group had more anxiety, depression, and social function in comparison with the other group.

Another finding showed that CHD patients have significantly more stress than the non patient group. This finding is reported in Table 2.

Table1. Independent t-test results to compare general health and its details between the patient and non patient groups

Variable		Mean	SD	t	p
General health	patient	61.5	7.5	21.78	.000
	non patient	22	5		
Depression	patient	18	1.2	9.34	.000
	non patient	4	1.5		
Anxiety	patient	17	1.8	10.4	.000
	non patient	7	1		
Physical function	patient	20	1.6	8.6	.000
	non patient	3	2		
Social function	patient	13	1.8	7.8	.000
	non patient	5	1		

Table2. Independent t-test results to compare stress in patient and non patient groups

Variable	mean	standard eviation	t	P
Patient	297.07	49.42	5.9	000
Non patient	170.3	52.31		

Discussion

Finding of this study showed that CHD patients had experienced more stressful events than non patients. This finding is compatible with the results of different studies in this domain (5, 6).

Nontraditional risk factors, such as psychological traits, have been increasingly recognized as important contributors to the genesis and outcomes of coronary artery disease (CAD). Mental stress induces significant peripheral arterial vasoconstriction, with consequent increases in heart rate and blood pressure. These changes are thought to underlie the development of myocardial ischemia and other mental stress–induced adverse cardiac events in patients with CAD. In conclusion, in this study, peripheral vasoconstrictive response to mental stress was more pronounced in men compared to women. This finding may suggest that men have a higher susceptibility to mental stress–related adverse effects (11). Kriegbaum et al., found a weak support for the effect of psychosocial stress on ischemic heart disease (IHD) measured with register based life events and found that IHD was associated with broken partnerships but not with job loss(12).

Stress can affect person's health through behavioral and physiologic changes. Individuals with high stress have a tendency to do actions which increase the possibility of their illness or injury. For instance, stress increases smoking and drinking alcohol. However, it decreases physical exercises and provides harmful effects on diets (17). Stress can also lead to heart diseases through psychological changes. It seems that stress has direct effects on coronary arteries and heart muscles. In reaction to stress or facing threatening or hazardous conditions, the heart beats faster, blood pressure goes up, and a lot of changes happen in the other body systems. In addition, the skin's blood vessels become narrow, the muscles contract, and blood circulation in the brain and muscles increases. These changes and the increase in the number of heartbeats increase the need of the heart for oxygen. It causes heart attack or angina pectoris (thorax pain) in the individuals who have heart diseases. Moreover, stress increases the clotting capability of blood. This clotting can produce complete or incomplete blocking of a coronary artery and lead to heart attack. On the other hand, when body hormones (Adrenaline) increase in response to stress they can injure the covering layer of arteries with increase in blood circulation. These damages cause hardening of vascular septum and formation of plaques. All of the aforementioned cases can explain the reasons why heart disease patients often suffer from heart pains in stressful situations and why heart attacks happen more under these conditions. Moreover, stress increases heart's work and this can increase the need of heart muscles to Oxygen and blood circulation in the heart arteries. Therefore, if this need is not fulfilled (for example in narrow coronary arteries), heart stroke occurs and the person suffers from thorax pain (18).

Another finding of this study showed that CHD patients had lower mental health than the non patients. This conclusion is comparable with the findings of other studies (1, 13) that showed a relationship between mental health and heart disease .

Approximately 20% of patients with coronary heart disease (CHD) have major depression and 20% have minor depression at any given point in the course of their illness. Depression causes significant psychological and social morbidity, and is a risk factor for further cardiac morbidity and mortality. Although there are many possible biological and behavioral mechanisms, the causal pathways through which depression increases the risk for cardiac events and death are not well understood. Despite the morbidity associated with depression, and the devastating impact it has on the quality of life of patients with CHD, it is under-diagnosed and often left untreated (19).

Although research has shown that psychosocial factors including depression are important risk factors for adverse events in patients with chronic heart failure (CHF), no large clinical trials have investigated the efficacy of psychosocial interventions to reduce these

factors in this population. In the research, in this field, an 8-week mindfulness-based psycho-educational intervention reduced anxiety and depression; this effect was attenuated at 1 year. Importantly, the intervention led to significantly better symptoms of CHF at 12 months compared to control participants. Our results suggest that interventions of this type might have a role in optimal therapy for CHF (12).

Considering the significant relationship between stress and CHD, decreasing stress resources through supporting therapies and training efficient confrontation strategies for stressful factors should be included in the therapies for CHD patients. For instance, improving individual's social support systems through group therapy, family therapy, and training communication skills can decrease stress effects. To study and to plan psychological interventions to reduce risk factors before CHD emergence seem necessary and can be useful in the recognition and decrease of psychological factors and their roles in heart diseases. There were some limitations in this study: First, the control group was selected from the visitors of the patients and they might have experienced stress themselves; second, another limitation of this study was uncontrolled hospitalization which itself is a strong stressful factor; third, using GHQ has some limitations and is related to somatic symptoms in physical patients.

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