Original article

The effect of training life expectancy and coping styles on negative emotions of cardiac surgical patients' mental health

Marzie Mohammadi Pashaky[1,*], Abdul-ali Yaghoubi[2], Abbas-ali Mahmoodi Molaee[3], Aliasghar Abbasi Esfajir[4]

(Received: 20 May 2014; Accepted 19 July 2014)

Abstract

Background and Purpose: Cardiovascular diseases are the most common causes of death worldwide and stress is the reason behind many negative emotions. Surgery is one of the most stressful situations. Coping styles and life expectancy affect people's mental and physical efficacy. The present study aims to determine the effectiveness of training life expectancy and effective coping styles to deal with negative emotions on cardiac surgery patients' mental health at Sari-based Fateme Zahra Hospital in 2013.

Methods: In this quasi-experimental study, 30 candidates for coronary artery bypass surgery referring to this center was selected using the available sampling method. They were then randomly included into two 15-member groups as experimental and control group. Stress management, anger management, and hopefulness training courses were held individually for 7 sessions. Before and after the intervention, the patients of both groups answered the questionnaires including the Coping Manners Questionnaire (by Lazarus & Folkman), Snyder's Hope Scale, and the General Health Questionnaire-12 (GHQ-12).

Results: Data analysis implied that there is a significant difference between the average general health in the experimental and control groups after training. Investigating the subscales of coping strategies in the experimental and control groups after training showed that there is a significant difference between direct coping, planned problem solving, and positive reappraisal in the two groups.

Conclusions: In patients with coronary heart disease, high stress, and negative emotions (anger, anxiety, depression) also as the candidates of coronary artery bypass surgery, training raised life expectancy level and the practical methods for coping with life can be great help to their mental health condition.

Keywords: Coronary artery disease, Stress, Coping styles, Hope, Mental health

Introduction

Currently cardiovascular disease is the most common cause of death in the world. In addition to its impact on mortality, the disease influences the morbidity, disability and productivity reduction (1). According to World Health Organization report, 41.3% of all deaths in 2005 in Iran has been due to cardiovascular disease, currently Coronary Heart Disease is the first cause of death in people over 35 years in Iran (2).

Cardiovascular disease is considered a psychosomatic disease and considering the effective factors in its genesis, a combination of biological and psychological factors has to be involved. Stress is viewed as a major cause among the psychological factors influencing coronary artery disease (3). Stress can create unpleasant emotions such as anxiety, anger, aggression, impatience, depression and impairment in cognition (4). Emotions play a major role in mental disorders (5). Conditions of stress affect

[1,*]Corresponding author: Department of Clinical Psychology ,Olom Tahghighat University, Amol, Iran. Email: marzieh.mohammadi1351@gmail.com
[2] Department of Clinical Psychology, Azad University, Behshar, Iran.
[3] Department of Clinical Psychology ,Olom Tahghighat University, Amol, Iran.
[4] Department of Clinical Psychology, Oloom Tahghighat University, Babol, Iran.

a person's behavior predisposing him to illness or injury; although the researchers have not found a causal relationship between them, there is a large correlation between these two, that is, illness & injury (6).

Although among the psychological factors influencing coronary artery disease, stress factor is considered the major cause, coping styles of stress is taken as the disease underlying factor (7). Lazarus and Folkman have identified two general ways of coping: problem-focused and emotion-focused coping (8). Lately, problem-focused coping styles have been discussed as the predicting factor of the outcome of the effective treatment in patients with heart transplants and psychological welfare (7, 2). Planned problem solving is the most useful and the most effective coping response than dealing with confrontation and defiance (6). So a person who has mental health deals with problems logically and adapts themselves to the environment and chooses the optimal solutions for the problems. Reviews by Vingerhoutz et al. (1996) and Williams et al. (2001) found that people with coronary heart disease deal with life problems and pressures emotionally compared to the healthy people (9).

Riolouska et al., (2013) conducted a study titled "coping styles in patients with systolic heart failure" where patients have used three coping styles namely problem-oriented, emotion-focused and avoidance, the results indicated that the evaluation of coping styles may affect training programs or psychotherapy in the patients suffering from heart failure experiencing psychological symptoms resulting from chronic physical ailments (10).

According to that the treatment process of many cardiovascular diseases leads to surgery, the surgery is a threat to health. The diseases are treated despite the fact that they leave another opportunity to live healthily, but it is deemed a major source of stress (11). Surgery is a situation that is not entirely controlled by the person and this is considered a threat for the person as a candidate for surgery and may experience frustration, so they may lose the motivation to recover (12). Hope is the motivation or energy supporting the patients to understand their goals and to help them adapt themselves to the disease leading to physical and mental health (13). According to Seligman, disappointment will create physical and mental illness (14).

The patients with coronary heart as the candidates for bypass surgery are stressed due to the specific circumstances of disease and require surgical treatment, which is kind of life-threatening and subsequently, experience emotional instability, and a variety of negative emotions such as anxiety, depression, grief and anger. Under such circumstances, the most inefficient ways of coping are used (11).

Research suggests that coronary heart disease is rapidly progressing and the researcher believes the ways to control and prevent in this area have been poor and the present study aims to evaluate the effect of educating hope and effective coping styles on the mental health of the heart surgery patients.

Materials and Methods

The study is based on quasi- experimental method designed with the pre-& post-tests and the control group. The population of the study included all patients with impaired coronary undergoing bypass surgery that were referred to Hazrat-e-Fateme Zahra (SA) hospital by the cardiologists. In the study, the available sampling method has been conducted on 30 patients selected according to their tendency to participate in the research and placed in two control and experimental groups, randomly.

The measures for being included in the research include: Diagnosis of coronary artery disease being confirmed by the coronary angiography, the patients having comments of the heart surgeon, surgery is considered the treatment of choice and the patients failing in all of the other procedures including

angioplasty or medical treatment and the willingness and consent being informed to participate in the research.

Data collection tool: Including the coping strategies scales of the Lazarus - Folkman, General Health Questionnaire GHQ-12 and the Schneider Hope Scale.

1 - Lazarus coping scale is a 66-item test based on a list of coping strategies (Lazarus & Folkman, 1980) prepared by Lazarus and Folkman (1985) assessing a wide range of thoughts and actions that people apply when facing internal and external stressful conditions. This test has two main emotion-focused coping styles with four subscales (direct confrontation, distancing, self-control, escape and avoidance) and problem-focused with four subscales (seeking support, acceptance, planned problem solving and positive reappraisal). Sixteen expressions of these tests are misleading.

The test reliability on a sample of 750 middle-aged couples was standardized. In this study, the reliability of the coping strategies has been estimated through alpha- Cronbach as α= 0.870. To check the validity of the test, ways of coping questionnaire has a high convergent validity (15).

2- General health questionnaire was developed to screen the patients and the healthy individuals with has four sub-scales including: (1) physical symptoms scale (2) the symptoms of anxiety and sleep disorders (3) social functioning, (4) the symptoms of depression (16).

In Iran, the form has been validated by the Iranian Institute of Health Sciences (SID) under the supervision of Montazeri et al. (2003). The questionnaire internal validity after translation and validation with alpha- Cronbach has been α= 0.87 (17, 18, 19). In the study, the internal reliability of the general health scale has been measured by alpha-Cronbach as α= 0.846, respectively.

3- Schneider's 12-item Hope Scale, 4 expressions are fillers, 4 expressions are related to factor thinking and 4 other expressions are correlated with the strategies. Internal consistency of the test ranges 0.74-0.84 and the test-retest reliability is 0.80 and during the periods of more than 8 to 10 weeks is higher than the rate. Ghobari et al. (2007) in the student population of Iran have reported the reliability of the test through alpha-Cronbach for the total scale as 0.82 for factor thinking subscale as 0.79 and for strategies 0.88 (20, 21, and 22). In the present study, the internal reliability of hope scale was estimated as 0.810 by alpha- Cronbach.

In the present study, the method was this way that through studying the case, the surgery date was specified initially, it was determined whether the time opportunity to participate existed or not, then an interview was done for familiarity and to establish a therapeutic relationship with the patient, the review of educational level, the patient's perception and awareness level as well as his willingness to participate in the research were performed. After communicating, the comments about the research process and how to fill in the questionnaire was administered to the patient, and then the questionnaire was handed to the patient. After completing the questionnaires, the researcher checked them regarding all the questions being filled in and in case of lack of response to some questions, the participants were asked to complete them.

In the test group, training the coping strategies and cognitive techniques of hope for seven sessions (the number of treatment sessions based on the treatment plan prepared by the researcher collaborating with and by assessment with the professors of the technology and taking the heart patient's particular mental and physical conditions into consideration and also their time limits and availability were assessed for each of the subjects individually. Training pamphlets on pre-&post-surgery care and stress management were given to the patients through the problem solving.

Treatment pamphlet has been prepared by the investigator using the book of life skills (8), cognitive

therapy techniques (23) self-relaxation and stress reduction (24) and the coordination, completion and confirmation has been used by the professor of clinical psychology. The day before surgery, the patients were given the questionnaire again after receiving a response. For the people unable to fill in the questionnaire, the questionnaires were read individually by the researcher. Data analysis was performed using independent t-test and paired t-test.

Results

The results of data analysis denoted that 75.8 % of the participants were male and 24.2% were female, and in both the control and experimental groups, the majority of the subjects were male. The mean age the participants in the study has varied between 40 & 70, and the most frequent of the experimental &control groups was related to the age range 50-60 (48.5% of the subjects) and for the minimum frequency, the age range 40-50 (21.2% of the subjects).

The study revealed that the general health in the control and experimental groups before training has been 5 and 4.75, respectively, and after training, the mean general health in the control and experimental groups has been 4.32 and 5, respectively. According to that the general health scale gets an inverse score, the reduction of the average score of the general health in the experimental group after training (from 2 to 4.75) shows the effectiveness of training hopefulness and the effective coping styles on heart surgery patients' health.

Table 1. Comparing the general health score in the control and experimental groups before and after training

Group		No.	Mean	S.D	Statistic t	Freedom Degree	sig
Control	before training	15	5.00	3.74	0.737	13	0.474
	After training	15	4.32	4.52			
Experiment	before training	15	4.75	3.32	3.347	16	0.004
	After training	15	2.00	1.46			

Table 2. Comparing Lazarus coping strategies subscales in both experimental and control groups before training

Variable	Group	No.	Mean	Standard deviation	Statistics t	Degrees of freedom	sig
Direct Confrontation	Control	15	6.75	4.01	-0.878	25	0.388
	Experiment	15	8.20	4.45			
Distancing	Control	15	8.75	2.72	0.304	29	0.763
	Experiment	15	8.47	2.45			
Self-Control	Control	15	11.50	3.94	1.176	29	0.249
	Experiment	15	10.05	2.89			
seeking support	Control	15	11.81	4.02	0.246	30	0.808
	Experiment	15	11.50	3.11			
accepting responsibility	Control	15	7.23	2.42	0.704	25	0.488
	Experiment	15	6.43	1.91			
Escape - Avoidance	Control	15	7.86	2.93	-1.960	28	0.060
	Experiment	15	10.07	3.19			
Problem solving	Control	15	10.00	4.17	-.374	28	0.711
	Experiment	15	10.50	3.14			
positive reappraisal	Control	15	13.44	3.72	2.307	30	0.028
	Experiment	15	11.00	2.00			
General health Strategies	Control	10	75.60	20.30	-0.563	19	0.580
	Experiment	11	79.82	13.71			

T-test survey in Table 3 related to comparing Lazarus coping strategies subscales in both the control and experimental groups after training indicates that a direct confrontation under the assumption of the variances equality with degrees of freedom as 31, the problem solving and positive reappraisal under variances inequality with degrees of freedom as 26 and 15.52, a significant difference is observed between the experimental and control groups. It can assumed that the amount of direct coping, problem solving and positive reappraisal between the experimental and control groups after the training is not at one level, because probability is less than 0.05. After training, in the coping strategies of distancing, self-control, seeking support, accepting responsibility, escape – avoidance

Table 3. Comparing Lazarus coping strategies subscales in both experimental and control groups after training

Variable	Group	No.	Mean	Standard deviation	Statistics t	Degrees of freedom	sig
Direct Confronting	Control	15	7.0	4.12	-2.12	31	0.042
	Experiment	15	10.06	4.16			
Distancing	Control	15	9.00	3.66	-0.292	21.56	0.773
	Experiment	15	9.33	2.29			
Self-Control	Control	15	11.56	2.80	1.60	31	0.121
	Experiment	15	10.06	2.61			
seeking support	Control	15	12.19	4.30	-2.017	21.63	0.056
	Experiment	15	14.59	2.12			
accepting Responsibility	Control	15	6.75	2.82	0.269	23.22	0.790
	Experiment	15	6.53	1.51			
Escape - Avoidance	Control	15	7.92	3.86	-1.34	27	0.190
	Experiment	15	9.75	3.45			
Problem solving	Control	15	10.92	4.01	-2.161	26	0.045
	Experiment	15	13.75	2.46			
Positive reappraisal	Control	15	14.92	4.40	2.36	15.52	0.032
	Experiment	15	11.63	2.31			
General health Strategies	Control	11	83.54	25.50	-0.286	13.47	0.779
	Experiment	14	85.93	12.00			

and the general coping strategies in the experimental and control groups, no significant difference was observed because the likelihood obtained is greater than the test level of 0.05.

Discussion

Coping responses have been described as the emotional, cognitive and behavioral efforts to adapt oneself to their environment or to prevent negative stressful conditions so if the coping efforts are of the effective, adequate and adaptive stress, the stress gets less stressful. If the coping style is inconsistent and inadequate, not only it doesn't control stress but the reaction is also considered as the source of stress and worsens the condition (25). Studies have demonstrated that most cardiovascular patients survive and recover after surgery; however, they remain at high risk and to make a full recovery and avoid relapse, they should adopt a certain lifestyle a part of which is learning the coping strategies with the negative emotions (9). A variable that plays a vital role in stressful life events is hope (26). Hope and optimism predict people's physical and mental health (27).

The study by Bijar, et al. (2009) on patients with breast cancer, Sotoude-asl et al. (2010) in studying the effect of two ways of pharmacotherapy and hope therapy on the quality of life of patients with essential hypertension and the one by Zhang Jing et al (2010) investigating the coping styles in the patients with cancer were in line with the present study and suggest a negative relationship between hope and emotion-focused coping style, the effectiveness of training hope on life quality and depression reduction (28, 14, 13).

The research by Siam et al. (2011) and Sogolitappeh et al. (2008) is consistent with the current research on the effectiveness of coping styles training on coping strategies of heart patients and the decrease in their negative emotions (2, 9). Riolouska et al. (2010) in research tilted" coping styles in patients with systolic heart failure" concluded that the use of emotion-focused styles were associated with increased risk of depression (10). The assessment of Coping Styles for training programs or psychotherapy is effective in the patients with heart failure experiencing psychological symptoms resulting from chronic physical illness.

Conclusion

It can be concluded that implementing various psychological programs including training life skills can change lifestyle and modify behavioral systems and the psychological condition of heart disease, move in order to promote healing and reduce the risk of coronary heart disease in the patients and prevent the incidence of the disease in these individuals substantially. Training hope can also increase the patient's optimism about the future & decrease their feelings of vulnerability in the future. Health professionals and organizations can play a more effective supportive role in this process as well. It is proposed to retain the effect of training, educating coping styles in a longitudinal follow-up of the patients after surgery and on the next visit the

increasing rate of coronary heart disease be done and given and today society is suffering from a variety of psychosocial & social stress, it is recommended to train coping strategies as first line of prevention in different levels of schools and universities. Among the limitations of the study are the small number of the subjects and the available sampling methods and also sampling in a governmental center, the length of the questionnaire and the mental and physical conditions of the patients undergoing coronary surgery and some of them refusing to participate in the study.

Conflict of intrerests

The authors declar that they have no competing interests.

Author's Contributions

M. Mohammadi has contributed to design, has written the draft and trained the patients, A. Yaghoubi contributed to design and prepar the treatment pamphlet, A. Mahmoodi has contributed to collect the data of sampls and interpreted the discusion, A. Abbasi Esfajir performing statstical analysis.

Acknowledgement

we appreciate of all Colleagues and Fateme Zahra Hospital nurses in sari and all of the patients participating in this study.

References

1. Longo D, Fauci A, Kasper D, Hauser S, Jameson J, Loscalzo J. Harrison's principles of internal medicine: cardiovascular diseases. Translated by Hamid Reza Ghodarzian, Masoud khodaie, Sara Razaghi. 18th ed. Tehran: Arjomand Publication; 2012 (Persian).
2. Siam Sh, Heidarnia AR, Tavafian SS. The effect of training on applying coping strategies for patients after cardiac surgery. J Isfahan Med. 2011; 29 (135): 433-444 (Persian).
3. Zeinali Sh, Ashrafian P, Beirami MA. Comparative study of personality factors and mental health status in patients and normal subjects. J Oromie Med. 2011; 22 (5): 432-438 (persion).
4. Atkinson RL, Atkinson RC, Smith EE, Bem DJ, & Hoeksema SN. Introduction to psychology. Translated by Mohammad Naghi Barahani et al. 13th ed. Tehran: Roshd Publication; 2011(Persian).
5. Khodapanahi MK. Motivation and emotion. Tehran: Samt Publication; 2012.
6. Sarafino E P, SHafiei F(translator). Health psychology. Tehran: Roshd Publication; 2012.
7. Khanjani Z, Faroughi P, Yaghoubi AR. Psychological risk factors in heart disease: An analysis of the role of personality and coping styles in heart diseases. J Tabriz Uni Med Sci. 2009; 32 (3): 30-34 (persion).
8. Kleinke C.L. Coping with life challenges (Anxiety, depression, loneliness, shyness, and failure). Translated by Shahram Mohammadkhani. Tehran: Espande Honar Publication; 2004 (Persian).
9. Sogoli tapeh F, Babapour Kheiroddin J, Mahmoud Alilou M, Beirami M, Hashemi T. The effect of life skills training (Anger management, assertiveness training, and relaxation training) on increasing assertiveness and reducing anger in cardiac patients after coronary artery bypass grafting. Journal of Psychology. 2008; 3(9): 119-132 (Persion).
10. Rydlewska A, krzysztofik J, Libergal J, Rybak A, Rydlewki J, Bnnasiak W, et al. Coping styles in patients systolic heart failure. Prezegl Lek. 2013; 70(1): 15-18.
11. DiMatteo MR. Health psychology. Translated by Kavyani M. 3rd ed. Tehran: Samt Publication; 2011.
12. Rosenhan D, Seligman MP. Mohamadi S(translator). Psychopathology. Tehran: Arasbaran Publication; 2009.
13. Zhang J, Gao W, Wang P, Wu ZH. Relationships among hope, coping style and social support for breast cancer patients. Chin Med J. 2010; 123(17): 2331-1335.
14. Sotoudeh Asl N, Taher Neshat Doust H, Kalantari M, Talebi H, Khosravi A. Comparing pharmacotherapy and hope therapy methods on the quality of life of patients with hypertension. J Semnan Uni Med Sci. 2010; 11(4): 2-5 (Persian).
15. Mousavi M H, Taghavi M R. The effect of evaluating stress and coping strategies in mental. J Hormozgan Health Med. 2007; 11(1): 83-90.

16. Fathi Ashtiani A. Psychological tests: assessing personality and mental health. 9th edition. Tehran: Besat publisher; 2012.
17. Palahang H, Nasr M. Epidemiological study of mental disorders in kashan city. Iranian J psy clin psy. 1996; 2(4): 19-27 (Persian).
18. Ebadi M, Harirchi AM, Shariati M, Garmarudi G, Fateh A, Montazeri A. Determining the reliability and validity of the 12-Item general health questionnaire. Payesh Quarterly. 2002; 1(3): 39-46.
19. Montazeri A, Harirchi A.M, Shariati M, Garmaroudi Gh, Ebadi M and Fateh A. The 12-Item general health questionnaire: translation and validation study of the iranian version. Health and Quality of Life. 2003; 1(1): 66-69.
20. Snyder CR, Lopez SJ. Hand Book of Positive Psychology. London: Oxford University Press; 2002.
21. Snyder CR, Lopez SJ. Positive psychology: the scientific and practical explorationws of human strengths. New york: Sage Publication In; 2007.
22. Kermani Z, Khodapanahi MK, Heydari M. Psychometric properties of snyder's hope scale. Journal of Applied Psychology. 2011; 3(19): 7-23 (Persian).
23. Leahy R. Cognitive therapy techniques. Translated by hamid poor H, Anduz Z. 2nd ed. Tehran: Arjomand Publication; 2010 (Persian).
24. Davis M. The relaxation and stress reduction workbook. Tehran: Tabib Publication; 2002.
25. Heydari Pahlavian A, Gharakhani M, Mahjoub H. Comparing experienced stress and coping strategies in patients with coronary artery disease and healthy people. UMSHA. 2010; 17(3): 33-38 (Persian).
26. Khodapanahi MK, Saleh Sedghpour B, Asghari A, Harirchi I, Katibaei J. The structural relationships between social support and hope in patients with cancer. J Psy. 2010; 14(3): 284-298.
27. Carr A. Positive psychology: the science of happiness and human strengths. Tehran: Sokhan Publication ; 2004.
28. Bijari H, Ghanbari Hashemabadi BA, Aghamohammadian Sheerbaf HR, Homaei Shandiz F. Evaluating the effectiveness of hope therapy on increasing life expectancy among women with breast cancer. Educational & Psychological Studies of Ferdowsi University. 2009; 10(1): 171-184.