

Research Article

Adherence to Treatment in Terms of Coping Behavior in Patients with Coronary Heart Disease after CABG

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Abstract

Adherence to treatment is a relevant factor which influences the effectiveness of therapy, especially after surgical intervention. The psychological aspects of adherence are potentially significant for the definition of the concept and for prediction of patient's behavior. Two groups of patients with CHD after CABG –adherent and non-adherent to treatment– were studied in terms of their coping behavior (their coping strategies and personality coping resources). A specific psychological profile of a non-adherent patient was defined as a result of the empirical research.

ABBREVIATIONS

CHD: Coronary Heart Disease; CABG: Coronary Artery Bypass Grafting (Graft Surgery); ANOVA: Analysis of Variance

INTRODUCTION

The behavior of patients, those who suffer from chronic diseases, conditioned by their psychological characteristics, adherence to treatment in particular, is one of the most acute areas of research in clinical psychology and psychosomatics. In cardiology it is especially important, for there is a vital threat for patients due to their disease.

According to the Russian Federal State Statistics Service, for the first 9 months of the 2015 (from January to September) CHD mortality in the Russian Federation amounted to 343.4 deceased persons per 100,000 of the population; CHD mortality reached the 26.0% of the total number of deaths from all causes, including external [1].

Although physicians nowadays dispose of advanced methods in cardiac surgery, which are very effective in treating CHD [2], a cure is ensured not only by medical professionalism and modern equipment, but also by patient's conduct. For example, one of the side effects of surgical intervention is the patients' subjective judgment on complete recovery, and also their beliefs about being completely healthy after the operation (as a consequence, their conviction that there is no need in further

therapy). Non-adherence to post-operative treatment may cause disease relapses, rising costs of treatment, mistrust in healthcare professionals and so on.

Thereby, the role of the patient himself becomes more significant; now the patient is more responsible for the results of the treatment; his/her actions directly lead to an increase or decrease of therapy effectiveness. Patients' behavior is mostly due to their own experience, properties of the situation, as well as their personality characteristics, which are usually not taken into account by the specialists who deal with the problem of adherence to treatment.

In connection with the aforesaid, the importance of psychological knowledge and research increases.

Nowadays clinical psychology is characterized by the evolution of views on the role of psychological factors in a holistic understanding of physical illness – moving the emphasis from recognition of the importance of personality traits in the development of the disease to the study of the individual's adaptation to disease mechanisms. The problem of psychological adaptation to the stressful conditions of chronic physical illness and serious treatment has become one of the central problems of modern clinical psychology, the solution of which is connected in each case with the study of the complex of protective and compensatory psychological formations, such as psychological defense strategies and resources of coping with stress, and the

"internal picture of the disease". In the recent years, special attention is paid not to the study of unconscious intrapsychic defense mechanisms, but to the study of coping mechanisms – mostly conscious and active behavior, aimed at overcoming the negative feelings and problems associated with the disease and treatment [3]; by Weber's definition, the main goal of psychological coping is to ensure and maintain the person's well-being, physical and mental health, and satisfaction with his/her social relations [4]. In the context of this research it seems appropriate to study the features of coping in connection with the definition of psychological factors of cardiac patients' adherence to rehabilitation treatment in the postoperative period in surgery clinic, since it is evident that the study of coping is closely related with the objectives of psychotherapy and social rehabilitation of patients and prevention of maladaptive forms of behavior in the treatment process, which can reduce its effectiveness.

In modern psychology, the transactional cognitive theory of stress and coping proposed by R. Lazarus [5, 6] is the most recognized; the author proceeds from the concept of subjective experience of stress and focuses on the cognitive processes. The idea that coping behavior is implemented through the use of coping strategies based on the personality ("internal") and environmental ("external") coping resources was the basis for the development of the coping theory. Thus, coping strategies are regarded as actual person's responses to a perceived threat as a way to manage stress [7-9], and personal resources – as relatively stable individual psychological characteristics, providing psychological background to overcome stress and promote the development of coping strategies [10]. These characteristics include, first of all, the typological personality characteristics.

Thus, the idea of coping behavior being the result of interaction between coping strategies and coping resources, defined the aim of the present investigation, which is the study of the mechanisms of stress-overcoming behavior (coping strategies and personality coping resources) among CHD patients with different degrees of adherence in the rehabilitation period after CABG.

MATERIALS AND METHODS

Sample

The sample consisted of 100 patients of both genders with CHD. The average age of participants was 60.14 years (SD = 8.95), with ages between 44 and 74 years, and gender distribution of 82 men (82%) and 18 women (18%). The patients underwent elective coronary artery bypass grafting (CABG) with complete myocardial revascularization with cardiopulmonary bypass at the Federal Almazov North-West Medical Research Centre (St. Petersburg, Russia).

Most of the patients included in the study (82%), before CABG had class III-IV stable angina pectoris; 92% – arterial hypertension; 74% – high cholesterol level; 77% – left ventricular hypertrophy, according to echocardiography data; 89% – overweight or obese; 65% – family history of cardiovascular disease; 64% of patients suffered myocardial infarction in the past.

Only 36% of patients attended the physician on a regular basis before surgery, 64% of patients have been taking regular antianginal drugs, 82% – statins, 97% of patients – aspirin. Only

16.5% of patients had target total cholesterol level (<4.5 mmol/L) prior to CABG. According to coronary angiography, a functionally significant stenosis (>75%) of 3 major coronary arteries were found in 77% of patients, hemodynamically significant lesions of 2 major coronary arteries – in 23% of patients. The lesion of the left main coronary artery $\geq 50\%$ was found in 23% of patients.

During the operation, an average 3.0 ± 0.9 bypass grafts was imposed to the coronary arteries.

The duration of in-hospital rehabilitation after CABG for patients included in the study was an average 11.4 ± 2.6 days with cardiologist supervision, exercise training, psychological counseling, patient education program with secondary prevention counseling. In the absence of contraindications, patients were offered a series of controlled exercise training; 45.7% of the patients underwent it.

Before hospital discharge, all patients received recommendations on adequate pharmacological treatment, risk factors modification, including diet, daily physical activity and self-controlled physical training, blood pressure monitoring, weight loss, smoking cessation for smokers, further cardiologist supervision, lipid management.

The patients were divided into two groups by an expert method (procedure performed by an interdisciplinary team of cardiologists and clinical psychologists). To assign a patient to one or another group many factors were taken into account, related both to drug therapy (the regularity of drug intake, the accuracy of dosage, etc.), and to non-pharmacological treatment (keeping a diet, rejection of bad habits, physical activity, blood pressure control and so on).

The first group –adherent to therapy– 52 persons (52%) who regularly follow the recommended drug therapy and non-drug treatment, and the second group –non-adherent to therapy– 48 persons (48%) who do not regularly implement the medical recommendations on drug therapy and non-drug treatment.

Tools

The research was conducted by the detailed study of patients' medical records, also by a structured interview for patients which consists in a range of questions, grouped into sections (clinical and physiological characteristics, socioeconomic, psychological, and so on), and two psychometric techniques.

The first is the R. Lazarus and S. Folkman Ways of Coping Questionnaire, adapted and standardized by Wasserman et al. (2009) [11], which is used for a differentiated assessment of the leading trends in the individual's coping. Its test-retests reliability is 0.84. The technique can be used in the study of the behavior in problematic and difficult situations for the individual, identifying specific ways of coping in different subjects. The questionnaire includes 50 statements, united in 8 scales (Table 1).

The second, the Big Five Questionnaire, adapted and standardized by D. Yanichev (2006) [12], which purpose is to study individual psychological characteristics and the personality structure. The technique aims to identify the five global factors of personality and, therefore, includes five scales (Table 2).

Table 1: Average scores on the scales of ways of coping in groups of patients.

Strategies of coping behavior	Patients		ANOVA	
	Adherent to therapy (n=52) M (DT)	Non-adherent to therapy (n=48) M (DT)	F	p
Confrontive coping	45.94 (1.69)	46.52 (1.30)	0.074	0.786
Distancing	49.70 (1.34)	50.87 (1.25)	0.405	0.526
Self-controlling	53.38 (1.31)	45.89 (1.32)	16.150	0.000
Seeking social support	50.14 (1.30)	48.07 (1.47)	1.127	0.291
Accepting responsibility	51.10 (1.29)	50.04 (1.25)	0.346	0.558
Escape-Avoidance	44.08 (1.45)	48.54 (1.26)	5.288	0.024
Planful problem-solving	51.24 (1.44)	48.87 (1.33)	1.451	0.231
Positive reappraisal	49.94 (1.30)	41.02 (1.06)	27.823	0.000

Abbreviations: ANOVA: Analysis of variance

Table 2: Average scores on the scales of personality traits in groups of patients.

Factors of personality traits	Patients		ANOVA	
	Adherent to therapy (n=52) M (DT)	Non-adherent to therapy (n=48) M (DT)	F	p
Extraversion	26.33 (0.67)	26.29 (0.82)	0.001	0.973
Conscientiousness	31.92 (0.62)	27.31 (0.81)	20.916	0.000
Agreeableness	32.29 (0.64)	29.65 (0.92)	5.676	0.019
Neuroticism	24.48 (0.87)	27.54 (0.90)	6.014	0.016
Openness	27.46 (0.80)	21.00 (0.95)	27.491	0.000

Abbreviations: ANOVA: Analysis of variance.

Procedure

Psychological assessment of patients' characteristics was performed before hospital discharge, during the rehabilitation period after CABG, and also later on outpatient basis. Psychological characteristics were evaluated in each patient, from both groups. Based on the statistical analysis held later, the differences between the groups, i.e., specific characteristics of patients of the two groups have been identified.

Data on adherence to therapy was collected during patients' planned visits to the clinic for cardiologist supervision, when they had returned to their usual lifestyle and their physical recovery was complete. The obtained data is on the adherence to treatment after surgery; based on these data we cannot judge the adherence of these patients before surgery.

RESULTS AND DISCUSSION

Results

The study of patients' with CHD psychological characteristics showed that both –their coping strategies and personality traits– are potentially significant for the definition of adherence.

The results of studying the characteristics of the patients' coping behavior after CABG by means of the Ways of Coping Questionnaire were expressed in barchart values of each coping strategy, which were analyzed and compared, and revealed statistically significant differences in the two groups of patients – adherent and non-adherent to treatment (Table 1).

It was found that adherent to therapy patients show higher values on the scales related to the “self-controlling” ($F = 16.15$; $p < 0.001$) and “positive reappraisal” ($F = 27.82$; $p < 0.001$) ways of coping. Two mentioned copings are associated with the patients' efforts to overcome the negative feelings in connection with the problem by purposeful suppression and containment of emotions, attempts to minimize their impact on the assessment of the situation, high control of their behavior (“self-controlling” strategy) and attempts to overcome the negative feelings in connection with the problem by its positive rethinking, considering the problem as an incentive for personal growth, focusing on a philosophical understanding of the problem situation, its inclusion in the broader context of the individual's self-development work (“positive reappraisal”).

Patients with poor adherence to therapy show higher values on the scale of the “escape-avoidance” coping ($F = 5.29$; $p < 0.05$) compared to adherent patients. This strategy is associated with the patient's attempts to overcome the negative feelings about the problem situation by avoidance: denial of the problems, false expectations, distraction, avoidance of responsibility, passivity, temper tantrums, alcohol consumption in order to reduce the emotional stress, and so on, which is usually considered to be no adaptive.

The study of the patients' structure of personality by using the Big Five Questionnaire revealed the individual psychological characteristics which are typical of adherent and non adherent to treatment patients (Table 2).

Two groups of patients turned out to be different from each other and vary a great deal in terms of personality characteristics.

The analysis of the barchart values of the five factors of personality traits showed that adherent to therapy patients are differentiated from non-adherent patients in several factors, labeled in the Big Five Questionnaire. The first group (adherent) have higher values on the scales related to the personality traits "conscientiousness" ($F = 20.92; p < 0.001$) (that is to say, high self-discipline, being organized, punctual, accurate), "openness" ($F = 27.49; p < 0.001$) (i.e. being independent, creative, innovative) and "agreeableness" ($F = 5.68; p < 0.05$) (i.e. willingness to agree, being cooperative, friendly, compassionate).

However, non-adherent patients showed higher scores on the scale "neuroticism" ($F = 6.01; p < 0.05$), meaning that they have higher emotional stability in contrast to adherent patients.

Discussion

The issue of adherence to treatment causes the interest of the researches over the last decades. Numerous studies aimed to analyze the factors influencing this phenomenon were carried out [13,14]. Since there is a great variety of such factor, several classifications of them were made [15].

Although many attempts were made to study the psychological factors that may influence adherence, such as patients' psychological characteristics, its role in forming an adherent behavior is still not clear [16].

Summarizing up the results of our empirical study of patients' psychological characteristics, it can be said that adherent and non-adherent to treatment patients with CHD after CABG have a specific psychological profile.

Non-adherent patients seem to be less self-organized and accurate than adherent patients; they have a lower grade of willingness to collaborate and a lower level of openness to experience, which is also sometimes called a "personality resources" indicator. At the same time this group of patients proved to be more balanced and tranquil than adherent patients. We cannot still affirm for sure that emotional instability is related with adherent behavior, but it is a fact that requires further studies and analysis, because if anxiety, timorousness and irascibility guarantee a more strict and precise adherence, while self-confidence and emotional stability gives a risk of non-adherence, it must be taken into account during interaction with the patient.

The data about patients' coping behavior also can be informative. It was found that non-adherent to therapy patients are characterized by a rare use of the self-controlling and positive reappraisal ways of coping; resembling results were already obtained in a similar sample [17]. On the contrary, the escape-avoidance strategy of coping is more typical for this group of patients, which is not a positive indicator because although this strategy can be effective in some cases such as acute stressful situations, most of the researches admit that it is not adaptive in cases of a long-term perspective, and adherence to long-term treatment in chronic diseases is exactly the case.

The study of mentioned aspects of patients' psychology was

carried out for a long time. In particular, such connections have been extensively studied, for example, in patients with oncological diseases. As for the coping behavior, it has been shown that the use of the active emotional-oriented coping strategies (positive reappraisal, self-controlling), helps cancer patients to reduce significantly the level of anxiety and depression caused by the uncontrollable threat to life and the high uncertainty of the disease situation [18]. The use of passive emotional-oriented coping strategies such as avoidance, is often associated with exposure to bad habits (alcohol abuse, smoking, and so on) in patients with CHD [19] and low adherence to treatment (tendency to violate the medical regime) in patients with asthma [20]. In some studies it was found even a negative effect of the avoiding coping on the course and outcome of cancer [21].

However, the problem of the influence of psychological factors on adherence to treatment is not yet definitely resolved: further research is needed. For example, a question requiring further investigation is the following: does adherence to treatment change after surgery? To answer this question it is necessary to carry out a dynamic study assessing the patients' adherence to therapy at all stages of treatment. At this point we can only assert the connection of the studied psychological features of patients with their adherence to postoperative treatment.

Another question that remains unanswered is: the discovered psychological characteristics described in the present paper, are they specific for patients with CHD after CABG, or not?

CONCLUSION

Thus all the aforesaid proves that psychology plays an important role in the cardiological medicine, particularly in the course of the disease, in the patients' treatment and rehabilitation processes. The obtained concrete empirical data on the patients' psychological characteristics can help in establishing a productive patient – healthcare provider communication, improving the patients' quality of life and the efficacy of therapy, as well as making psycho corrective programs for patients who are prone to mental disturbances or non-adherence to treatment.

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