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Psychological interventions in cardiology – short-term motivational strategies

Anna Mierzyńska, Karolina Jurczak, Ryszard Piotrowicz

Summary

Cardiovascular diseases are the most important cause of death in industrialized countries. They require long treatment and their prevention is a long-term effort at individual and social levels. Therefore more and more attention is drawn to the psychosocial processes and phenomena associated with people engagement in health harmful behaviour.

The current state of medical and psychological knowledge allows the selection of several major research directions integrating these two areas within cardiology. These directions regard physiological mechanisms of the development of cardiovascular diseases, the impact of psychopathological symptoms on patients' functioning and psychological mechanisms associated with patient compliance. Studies in cardiac patients indicate the effectiveness of many psychological interventions. It has been proven that they have significant impact on the quality of life, a level of anxiety, symptoms of depression, symptoms of post-traumatic stress and mortality in cardiac patients.

The main factor exerting influence on patients' coping with the treatment process and on their commitment to activities beneficial for their health is motivation. The importance of motivation process in the course and effects of treatment was the basis for development of an approach known as Motivational Interviewing (MI), which is an effective tool for promoting involvement of patients in the treatment process. Another effective approach is also a short-term Solution Focused Brief Therapy (SFBT). It allows to cooperate with people in various contexts, including somatic patients, both during hospitalization and outpatient treatment. It is worth noting that the situation in the field of psychocardiology is steadily improving.

psychological interventions / cardiac patients / Motivational Interviewing / Solution Focused Brief Therapy

INTRODUCTION

Despite the changes in the structure of diseases observed in recent years, the cardiovascular diseases are still the most important cause of death in industrialized countries, accounting for 49% of all deaths in women and 40% of all deaths in men in Europe [1,2]. Cardiovascular diseases, as civilization diseases, are considered to be medical conditions with long treatment process and their prevention is a long-term effort at individual and social group levels. According to WHO data, approx. 80% of heart diseases and strokes can be avoided, if the most important risk factors can be eliminated [3]. Among the factors that mostly influence the development of cardio-

Anna Mierzyńska, Karolina Jurczak, Ryszard Piotrowicz: Department and Clinic of Cardiac Rehabilitation and Noninvasive Electrocardiology, Cardinal Stefan Wyszyński Institute of Cardiology, Warsaw, Poland
Correspondence address: amierzynska@ikard.pl

vascular disease are arterial hypertension, smoking, improper diet, alcohol abuse, high cholesterol, obesity and low physical activity [3]. Nowadays, more and more attention is drawn to the psychosocial processes and phenomena associated with people engagement in health harmful behaviour, due to their adaptable nature.

Psychological aspects of cardiac diseases

At the individual level, the diagnosis and treatment of heart diseases are of considerable importance for the life and wellbeing of patients. Many of the difficulties faced by chronically ill people are subject of a number of broad spectrum research in the field of clinical health psychology [4, 5]. Most studied and described psychological effect of cardiovascular diseases is significantly decreased quality of life, and the occurrence risk of serious adjustment and functional disorders. Many researches indicate that the people treated for cardiac reasons significantly more often than healthy people experience e.g. depressive and anxiety disorders. It has a significant impact on compliance with treatment requirements and quality of life with the disease [6]. Research conducted over the years confirmed the impact of psychological factors (such as locus of control, the level of perceived stress, and important life events) as well as psychopathological factors (such as depressive episodes, dysthymia, bipolar disorder, generalized anxiety disorder, and alcohol abuse) on development of cardiovascular diseases and their impact on the prognosis of patients [7].

The analyses indicating a significant relationship between psychological factors and cardiovascular diseases increase the importance of prophylactics based on psychological interactions at each stage of the treatment. An increasing demand for interdisciplinary approach to the treatment of cardiovascular diseases contributed to formation of psychocardiology, highlighting the role of psychosocial factors in the aetiology, course, treatment, and rehabilitation of cardiac diseases [8]. The current state of medical and psychological knowledge allows the selection of several major research directions integrating these two areas within cardiology. These directions regard physiological mechanisms of the development of cardiovascular diseases, the impact of psychopathological symptoms on functioning of patients, effects of treatment, and psychological mechanisms associated with patient engagement in the treatment and patient compliance.

The results of research in the field of psychoneuroimmunology published over last 40 years allow better understanding of intermediary mechanisms between the functioning of individual people and cardiovascular risk. One of the widely discussed issues is increased activation of the hypothalamic-pituitary-adrenal axis found in many studies and elevated level of inflammation markers (such as interleukin-6 or CRP) in people with depression or reporting chronic stress [9]. Similar data refer to people with high levels of neuroticism, which is an important argument in the discussion of personality bound risks of cardiovascular disorders [10]. The level of inflammatory markers is a recognized risk factor for cardiovascular dysregulation, it affects the rate of development of atherosclerosis, and thus the risk of myocardial infarction, and contributes to the impaired myocardial function and its remodelling). Furthermore, the increased activation of the hypothalamic-pituitary-adrenal axis contributes to the development of e.g. arterial hypertension and lipid disorders [11].

People with cardiovascular disease often face numerous difficulties of a psychopathological nature. Their prevalence, treatment mechanisms, and treatment options are studied widely. In recent years, the most popular topic is the relationship between depression and quality of life as well as the course of treatment of cardiovascular diseases. Mood disorders are present in a population of cardiac patients three times more frequently than in general population – it is estimated that approx. 15-20% of people treated for cardiovascular diseases have depression [12]. The prevalence of symptoms of depression varies among specific groups of cardiac patients reaching 31.1% among people after acute myocardial infarction and 42% for those treated for severe heart failure [13,14]. The most important risk factors for depression among cardiac patients are: young age, female gender, and previous depressive episodes (pre-emergence of heart disease) [12]. It is estimated that the co-existence

of mood disorders, in addition to a significant impact on daily functioning and quality of life, significantly worsens the prognosis of cardiac patients [15-17]. This is particularly applicable when the symptoms of depressed mood appear shortly after a cardiac incident [18]. The pathophysiology of cardiovascular diseases in patients experiencing depressive symptoms is based on dysregulation of the hypothalamic-pituitary-adrenal axis, increased levels of inflammatory markers, and increased platelet aggregation, which may contribute to the formation of blockages. However, significantly worse prognosis in this group of patients is caused by behavioural mechanisms [19]. People suffering from depressive disorders are significantly more likely to be less compliant, irregularly taking of the prescribed medication and to engage in behaviours harmful to health [20]. Additionally, the tendency to withdraw from social activities and contacts is also an important risk factor for worsening of symptoms. The intermediary mechanisms between depression and risk of cardiovascular events are presented in Tables 1 and 2 [21,22]

Table 1. Physiological intermediary mechanisms between depression and cardiovascular diseases

Increased activity of hypothalamic-pituitary-adrenal axis
Reduced heart rate variability
The inflammatory process
Increased aggregation of platelets
Elevated levels of serotonin in the blood
Elevated levels of catecholamines
Cardiovascular side effects of antidepressants (e.g. increasing risk of arrhythmia)

Table 2. Behavioural intermediary mechanisms between depression and cardiovascular diseases

Failure to comply with medical recommendations
Smoking and alcohol abuse
Arterial hypertension
Lack of motivation for change of lifestyle
Diet related factors
Lack of physical activity
Inadequate social support

Since numerous studies confirm the importance of treating depression in the course of cardiac therapy, international cardiology and psychiatry societies recommend performing screening for depression among cardiac patients [23,24].

Among cardiac patients a significant problem are also anxiety disorders with estimated prevalence at 20-45%. The most common disorders are social phobia (21.3%) and generalized anxiety disorder (18.7%) [25, 26]. They may be, like they are in the case of depression, the comorbid disorders, requiring simultaneous treatment along with cardiovascular diseases. Additionally, they can provide emotional trigger for the myocardial infarction [27]. Therefore, psychoeducation and psychological counselling, combined with teaching relaxation are a very significant element of treatment recommended by medical societies [23, 28].

Research in the field of health behaviours is an important element to enhance knowledge about prevention possibilities and effective ways of treating the diseases. Since 1980s there is observed an increasing interest in interventions supporting the motivation for treatment, especially among people treated for chronic diseases. To address the importance of patient-provider collaboration few terms are used. The term "compliance" is used to describe "the extent to which a patient acts in accordance with the prescribed interval and dose of a dosing regimen" [29], whereas "adherence" is a broader term describing "the extent to which an individual's behavior regarding a medical treatment regimen corresponds with the agreed-upon recommendations of a health care professional" [30].

Adherence is a major and complex problem in cardiac care with significant impact on effectiveness of treatment. Levels of medication non-compliance may vary depending on type of cardiovascular illness. It is estimated that after acute myocardial infarction even 27% of prescriptions are not filled up within a week after a discharge from the hospital and up to approx. 43-60% of patients with coronary artery disease does not regularly take cardiac medications and have difficulties with keeping a healthy diet [31-33]. Moreover the tendency to inadequate long-term use of a prescribed therapy (non-persistence) among acute coronary syndrome increases over time [34]. Among patient with chronic conditions, such as heart failure or hypertension levels of non-compliance are also common (respectively 22% and 25-30% among those groups) [35-38].

Additionally to difficulties in adequate use of medication, cardiac patients experience significant barriers to implement lifestyle changes. Only approx. 37-40% of patients comply to the recommendations to sustain appropriate physical activity after cardiovascular incident even if they recognize its importance, whereby people with heart failure report even more difficulties in this area – 40-91% does not maintain any regular physical activity [39,40]. Patients after acute cardiovascular event also present low rates of smoking cessation, although significantly higher among those who were provided with counseling or pharmacotherapy [41]. Weigh loss and maintaining appropriate body mass is also difficult for cardiac patients – research show that after myocardial infarction 27% of patients are capable of reducing their weight, but 18% are gaining significantly more body mass [42].

These factors are significant for suboptimal cardiac treatment and are significantly associated with increased mortality among cardiac patients [43]. The current state of knowledge allows to identify the risk factors for non-compliance to the recommendations, such as low socioeconomic status and low level of education, lack of social support, a high level of stress and negative emotions, and ineffective communication with medical staff (including an unclear formulation and communication of doctor's recommendations) [8]. The awareness of these factors makes the requirement for medical personnel to employ special care of people whose life situation or personal performance may impede the introduction of favourable lifestyle changes.

Interdisciplinary approach in cardiology

In Poland, the tradition to use the psychological knowledge in the treatment and rehabilitation of cardiac patients dates back to the 1960s. In 1961 the first psychology laboratory in Poland was established as a part of the Department of Cardiology, headed by Prof. Askanas – the creator of the Polish model of rehabilitation and supporter of the interdisciplinary approach to the treatment of cardiovascular diseases [4]. The effectiveness of rehabilitation interactions in this group of patients has been confirmed in numerous studies, and a participation in rehabilitation after cardiac incidents is recommended by international scientific societies [44]. The main advantages of cardiac rehabilitation are significant prolongation of life and improvement of its quality. Patients after cardiac rehabilitation are significantly less hospitalized, because of cardiac or other reasons [45]. An important aim of the interventions during cardiac rehabilitation is to improve the welfare of the patient and to deepen the skills to cope with the difficulties associated with the disease and other life experiences [44].

Due to the increasingly widespread awareness of the benefits that patients may achieve because of the psychological assistance in the healing process, there are more and more Polish studies constituting a theoretical framework for the work of psychologists in cardiology [46, 47]. The work of a psychologist in clinics specialising in cardiac diseases often requires a psychologist to be flexible and have a high level of expertise not only in the field of psychology but also in medicine along with awareness of their mutual interactions. Psychologists working in cardiology departments (but also in other somatic wards) often must work under time pressure resulting from the limits of hospitalization, which imposes on them the need to develop timetables that are both short-term and reliable; this applies to both diagnostic tools, as well as to psychological interventions.

The main objective for patient-psychologist collaboration is to develop the best possible strategies enhancing adjustment to new circumstances caused by chronic illness and treatment. Patients' aims in the course of cardiac treatment often consist of sustaining their autonomy and social relationships as well as self-manage physical health [48]. The core role of psychological support is to foster behaviours which enable balancing patients' values and priorities alongside with self-care and adherence to treatment.

Effective forms of psychological assistance in work with cardiac patients

Growing interest in the progress of strategies of evidence-based psychological proceedings, increases the number of studies that aim to evaluate the effectiveness of psychological therapy to somatic patients. The literature concerning psy-

chological assistance in non-psychiatric health system shows that some of the approaches seem to be more effective than others. Studies in cardiac patients indicate the effectiveness of such strategies as psychoeducation, psychotherapy, psychological counselling, mindfulness (MBI), and stress coping trainings. It has been proven that psychological interventions have significant impact on the quality of life, a level of anxiety, symptoms of depression and symptoms of post-traumatic stress and mortality in cardiac patients [49-53].

The results of these analyses are reflected in the protocols regulating the care of patients in somatic wards. Within the cardiology the most widely recommended is cognitive-behavioural approach [28]. In the context of systemic therapeutic paradigm to improve the quality of care in somatic patients, there is also growing recognition of benefits derived from use of motivational enhancement. In recent years, there is a visible increase of interest in decision-making process concerning the modification of harmful habits and boosting self-motivation in healthy lifestyle. The main factor exerting influence on patients' coping with the treatment process and on their commitment to activities beneficial for their health is motivation [54]. Further to the beginning of treatment, when motivation is essential to cope with the information threatening to their health and which requires targeted actions, treatment of chronic diseases is also associated with increasing motivation of another type. It refers to the support of already initiated actions, especially in the face of obstacles or the lack of the expected treatment outcome. Patients starting the treatment differ in the level of motivation and their beliefs about the impact of their behaviour on the effects of therapy. This continuum extends from being totally uninvolved in action, to having a strong intrinsic motivation.

The first publications in the field of motivation to start and maintain treatment appeared in the 1980s. The initial impact of motivation practices was related to drug treatment but nowadays they are used also in the context of treating chronic diseases (such as cardiovascular diseases, diabetes, asthma, chronic pain) [55]. The importance of motivation process in the course and effects of treatment was the basis for development of an approach known as Motivational Interviewing (MI) [56]. Motivational Interviewing is based on the four basic principles along with the specific process strategies such as: expressing empathy, developing discrepancies, usage of resistance, and supporting self-efficacy.

At the source of motivational therapy there is an assumption that many patients seeking help demonstrate ambivalence towards the desirable change and the motivation in the therapeutic process is a phenomenon of variable degree [55]. An effective therapist must have an ability to adjust himself/ herself to these fluctuations and to work with the patient acknowledging the changes. The main objective of the Motivational Interviewing is enhancing patient's internal motivation to change. A desirable change is formed based on patient's personal goals and values, and to a much lesser extent is the result of external influences, such as the encouragement of others. Sensing too much pressure from the environment may, actually reduce a need for change This may be due to a sense of danger to patients' personal freedom and autonomy, which can trigger behaviours opposite to the desired by the environment.

Use of Motivational Interviewing evolved from a total, unconditional acceptance of the autonomy of the patient (which results from the therapy focused on the client, which is the essence of MI), to emphasizing and encouraging that a patient uses the "language of change" which represents approach more focused on the goals [54]. Thus, the core purpose of the Motivational Interviewing is creation of an atmosphere of acceptance and engagement of the patient in an independent formulation of the reasons for which he/she seeks the change, and finding possible action strategies [57].

Motivational Interviewing is an effective tool for promoting involvement of patients in the treatment process. The studies evaluating the effectiveness of such interventions show a beneficial effect in various contexts and with various groups of clients [58]. The research shows the effectiveness of the interventions based on MI, even if the counsellor has a limited time for the patient (approx. 15 min.) [58]. Example of effective utilization of MI during cardiac rehabilitation is shown in Table 3.

Table 3. Motivational Interviewing directed toward patient showing ambivalence in the course of cardiac treatment

52-years-old patient during cardiac rehabilitation was reporting high level of anxiety related to uncertainty of his health and physical abilities. During conversation with psychologist he admitted that he was afraid he will not be able to take care of his health (e.g. take medication as prescribed, maintain nicotine abstinence) in account of of his responsibilities (work strain and everyday chores). Discrepancies between his obligations toward family and need for sustaining his health were causing high level of tension and worrying. Meetings with psychologist allowed him to establish a treatment plan that complied with his needs and helped him to reach for the support he needed from his significant others.

The effects of Motivational Interviewing among cardiac patients have been studied in relation to the commitment to regular taking of medications and changing their lifestyles. Among the patients treated for heart failure, the use of Motivational Interviewing significantly increased their commitment to behaviour aimed at taking care of themselves in the course of treatment and this effect was maintained for over 90 days after the intervention [59]. This approach is also recommended for working with people using the primary health care, as part of the preventive measures [60]. Examples of studies assessing effectiveness of Motivational Interviewing are presented in Table 4.[61-65].

Table 4. Examples of studies assessing effectiveness of Motivational Interviewing

Authors	Year of publication	Participants
Barnes RD, Ivezaj V	2015	Patients with excess weight
Bóveda-Fontán J, Barragán-Brun N, Campiñez-Navarro M, Pérula-de Torres LA, Bosch-Fontcuberta JM, Martín-Álvarez R, et al.	2015	Patients with dyslipidemia
Cheng D, Qu Z, Huang J, Xiao Y, Luo H, Wang J	2015	Patients after stroke
Christie D, Channon S	2014	Patients with diabetes or obesity
Lindson-Hawley N, Thompson TP, Begh R	2015	Patients addicted to nicotine

Another effective approach in working with cardiac patients is also a short-term Solution Focused Brief Therapy (SFBT). Solution Focused Brief Therapy, as a postmodern therapy, differs from traditional approaches already at the stage of counsellor's work assumptions. In work with a patient a therapist focuses on what is the desired change and shows minimal interest in analysis of the patient's difficulties. De Shazer suggests that the gathering of information regarding the nature of the problem is not necessary to introduce changes and neither is there a need to search for the "right" solution [66]. Each person is able to implement various policy options, and the ones that are effective for one person can be not effective for a different person. In the Solution Focused Brief Therapy it is the patient who chooses the objective that he wants to focus on, little attention is paid to the diagnosis, understanding the nature of the problem or patient's past experience.

According to the basic assumptions of SFBT all people asking for help have the ability to effectively cope with the difficulties and the resources for improving their quality of life. Thinking focused on solutions allows the patients to identify effective ways of coping with difficulties, and the focus on solutions and the future increases the chance of obtaining results within a short time. Enabling the patient to discover his resources fosters more positive attitude toward illness and more efficient coping with the treatment [67]. Motivation for change is developed by directing a patient's attention to his/her resources and joint discovery of the resources that would allow a patient to survive the most difficult moments. According to the SFBT's assumptions the optimal client's/ patient's characteristic refer to an intention to change, having the adequate skills to implement it, and commitments to do everything he/she can to make the change possible. The patient is regarded as an expert on his /her life – because people and their experiences are unique there are no universal solutions to everybody's problems. It is the patient who decides whether he/she wants to use a par-

ticular strategy and what direction he/she wants to follow [66, 68].

The effectiveness of solution focused interactions is due to the redirecting of patient's attention from the undesirable scenario to the desired one [69]. The basic elements of SFBT session is a conversation with a goal to better understand the patient's view of the problem, to identify patient's resources and to seek for instances when the patient coped better with a problem or circumstances in which the problem was less pronounced. Successful cooperation enables finding the preferred scenario or creating a vision of the patient's life in which the problem does not exist. According to the main assumptions of SFBT, it is important to repeat the actions which are effective and change a form of activity if actions are ineffective; however if something is not broken, there is no need to fix it. Core SFBT elements could be useful in creating therapeutic alliance with patients adjusting to their treatment (Table 5.).

Table 5. Utilization of SFBT during treatment after coronary artery bypass graft (CABG)

44-years-old patient after coronary artery bypass graft reported problems with mood and accepting his heart condition. He was experiencing pain after the surgery and felt low self-esteem related to decreased physical strength. During cooperation with psychologist he explored his resources helpful in coping with new situation. In the past he had been treated for alcohol dependence and was able to maintain sobriety since that therapy. He also had functional social support network which provided him with emotional support during his treatment in the past. As a result of psychological intervention patient was able to establish strategies enhancing his coping and self-image.

The SFBT has some elements in common with other effective forms of assistance. Working on resources and using the model of cooperation oriented towards strengthening the patient resources resembles certain aspects of the Motivational Interviewing while giving the patient homework reveals similarities to cognitive-behavioural therapy [69]. Milner and O'Byrne in their therapeutic experiences underline the effectiveness of combining the SFBT therapy with a narrative therapy [70].

The SFBT approach is an effective form of cooperation with people in various contexts, including somatic patients, both during hospitalization and outpatient treatment. The results show the effectiveness of this form of assistance in relation to the process of adaptation to the prescribed treatment [71]. It is also recommended, as Motivational Interviewing is, for work with cardiac patients as a part of an interdisciplinary approach to the treatment of cardiac treatment [71]. Research examining the effectiveness of Solution-Focused Brief Therapy are presented in Table 6. [72-75].

Table 6. Examples of studies assessing effectiveness of Solution-Focused Brief Therapy

Authors	Year of publication	Participants
Gingerich WJ, Peterson LT	2013	Patients with behavioural and mental health problems
Kim JS	2008	Meta-analysis in various settings
Stams GJ, Dekovic M., Buist K, de Vries L.	2006	Patients during behaviour change

CONCLUSIONS

The research shows the importance of psychological assistance in the prevention and treatment of cardiovascular diseases. It is worth noting that the situation in the field of psychocardiology is steadily improving – doctors increasingly recognize the need and the effects of cooperation with psychologists in this area. Psychologists employed in cardiology clinics have many effective methods aimed at assisting patients in adapting to the difficulties associated with treatment of chronic diseases.

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