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Research Article

Social Determinants of cardiovascular Disease

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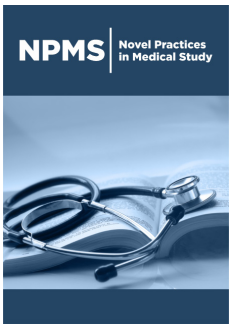

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Abstract

Objective: Cardiovascular Diseases (CVD) are the leading causes of mortality in Portugal and globally. Its prevalence spans several generations and does not choose a gender. Psychological interventions are carried out to help patients through the adaptation process and are mainly related to emotional and behavioral management and psychoeducation regarding patients' lifestyles. We allude to the issue in the context of cognitive-behavioral intervention, in which the beliefs and meanings of the disease are worked on to achieve emotional regulation and promote self-care.

Methods: We reviewed the literature that presents the main results of studies published over the last 20 years concerning psychological intervention in adapting to CVD. The databases Science Direct, Taylor & Francis, Google Scholar, Springer Link, B-on, Pub Med, Scielo and RECAAP were used, using the keywords "psychological adaptation," "cardiovascular disease," "cognitive-behavioral therapy," "intervention plan," and "psychological intervention." Only Portuguese and English papers were considered. The search was performed between September 21 and October 21, 2022.

Result: The adaptation process involves helping cardiovascular patients to reduce fear, anxiety, and depression in response to the necessary changes in their lives. Part of the adaptation to the disease is also preventive.

Conclusion: The main findings and their practical implications highlight a brief update of research and their psychosocial determinants in the last 20 years about cardiovascular diseases and the most effective psychological intervention.

Keywords: Cardiovascular disease; Cognitive behavioral therapy; Review study

Introduction

Worldwide, Cardiovascular Diseases (CVD) are a significant health issue, affecting the population of productive age and cooperating to increase the associated costs [1-3]. CVD is more common among people 65 or older [4], which is explained by the propensity for atherosclerosis propitiated by aging. However, it progresses gradually with age up to 60 years in men, while in women, the progression begins after menopause from age 50 [5]. At national and global levels, CVD remains the leading cause of death and disability in women and the second leading cause in men [6]. According to the most recent report from the World Health Organization (WHO), in 2019, an estimated 17.9 million people died from CVDs, accounting for 32% of all global deaths. Heart attacks and strokes were responsible for 85% of these deaths (WHO, 2019). In Portugal, the scenario is not different, and CVD is the leading cause of death and disability, especially in women, and is the second largest cause in men [6]. From a European perspective, at an economic level, the costs associated with CVDs represent 169 million euros per year [7]. Additionally, 35 billion euros are linked to the loss of productivity, contributing to 21% of CVD-related costs [7]. From a national perspective, the Portuguese National Health Service has expenditures of 476 405 361 billion euros with CVD-related pharmacology and hospitalizations [7] and 1,174 billion euros in 2018, according to the official site of the European Commission Healthcare costs of CVD and cancer in the European countries, [8].

Being CVD the world's leading cause of death, the World Health Organization (WHO) believes that heart disease will continue to rise until 2030, the main drive for high mortality and Quality of life reduction [9]. Despite substantial decreases in mortality from stroke and ischaemic heart disease over the past two decades, these remained the two leading causes of death in Portugal in 2018 [6]. Pneumonia and other respiratory diseases like Chronic Obstructive Pulmonary Disease (COPD) also accounted for a substantial share of deaths. Lung and colorectal cancers were the most frequent causes of death by oncological diseases [6]. The risk factors for CVD vary according to age, and so we present a sociological analysis from three distinctive generations, highlighting their psychosocial determinants of CVD. Given the prevalence of CVD in the population aged above 45 years, we can reflect on the fact that three generations are included, the first recognized as the silent generation (born between 1925-1942), the baby boomers (born between 1945 and 1964) and generation X (born between 1965 and 1981). We discuss middle and late adulthood [10]. Because they are responsible for numerous roles and responsibilities in their personal and professional lives, middle adults sense that their lives are stable and controlled (Skaff, 2006 [10]). From an employment perspective, these individuals find themselves at a stage where they consider themselves more productive than at any other time [10]. At functional levels, this generation begins to feel some impacts on the functioning of the heart, and it "begins to pump slower and irregularly in the 50s" [10]. From the age of 40 or 50, the emergence of CVD becomes common because arterial walls begin to thicken and become stiffer since "the declines in cardiovascular condition are particularly abrupt after the age of 45" (Jackson et al., 2009,[10]).

In addition to these factors, in middle adulthood, family, money, and work are the main generators of stress when changes in these roles occur (Almeida & Horn, 2004,; Almeida et al., 2006,). The emergence of CVD represents a stressful factor because it changes the individual's roles within the family and at work. Another aspect that we need to consider is that adults of this generation tend to be more disposed to psychological distress, namely, to express sadness, restlessness, or nervousness and therefore more susceptible to CVD. When it comes to late adulthood, we can characterize it as a strong and consistent type of personality that remains under the influence of the environment. The silent generation, and baby boomers, are very much tied to their work activity. So, the need to retire or move away from work is a painful decision, given the emotional repercussions on their financial or personal situation [10]. Like other pathologies, CVD is influenced by different risk factors: High systolic blood pressure; Dietary risks, High LDL cholesterol, Air Pollution, Tobacco; high body-mass index, High fasting plasma glucose; kidney dysfunction, non-optimal temperature, Other environmental risks; low physical activity [11]. The European Charter for Heart Health organized these risk factors into four categories: (a) behavior-modifiable ones, (b) lifestyle, (c) biological, and (d) non-modifiable ones [7]. In 2019, "68% of the Portuguese population had two or more risk factors for CVD and 22% four or more of these factors" [12].

It is estimated that 80% of CVD cases are associated with modifiable risk factors such as living conditions, education, low income, and working conditions, which means that it is possible to prevent and control CVD through behavioral changes ([7,13] Ribeiro et al., 2013 [14]). Regarding the risk factors associated with the lifestyle of individuals, the highlight is tobacco consumption, an unbalanced diet, alcohol consumption, and a sedentary lifestyle [7]. Relying upon sedentary behavior with regular physical activity allows individuals to reduce blood glycemia and increase HDL cholesterol, such as heart rate ([15], Leal, 2004). Apart from risk factors associated with lifestyle, we also have biological factors that are related to CVD, specifically: (a) blood pressure, (b) blood glucose, (c) lipids, and (d) excess weight [7]. Although it is fundamental for the body, when LDL cholesterol occurs at high or low levels of HDL, it is harmful since it accelerates atherosclerosis and contributes to a higher probability of myocardial infarctions [16].

Hypertension, in turn, is associated with other risk factors, such as diabetes and obesity, directly related to the poor eating habits of individuals (excessive consumption of salt and fats) and a sedentary lifestyle [17]. On the other hand, we can also refer to non-modifiable risk factors, which relate to (a) gender, (b) age, (c) ethnicity, and (d) genetics [7]. Regarding gender, some studies state that despite the proportional mortality, females develop CVD about 10 to 15 years later than males [18]. When the COVID-19 pandemic emerged, the presence of the unknown, the uncertainty, and the mandatory stay-at-home confinement increased stress and anxiety in the population. After knowing more about the disease, its transmission, and risk factors, the pandemic also represents a risk factor for CVD, given its comorbidity [19]. During the pandemic, many deaths were recorded in cardiovascular patients infected with the virus, as this comorbidity was assumed to be an increased risk for death [20,21]. Accordingly, if a subject in a non-pandemic context acting in the face of disease is already challenging, to do so with the awareness that the probability of dying, in case of infection is significant, causes higher levels of anxiety and fear. The global chronic disease epidemic has indicated an increase in CVD in the developed and developing world with critical anti-aging genes repressed that are important to the the survival of these CVD individuals (A,B,C). We intend to review the main results of studies published over the last 20 years regarding psychosocial determinants of CVD and psychological intervention.

Methods

The search period was performed between September 21 and October 21, 2022, in the Science Direct, Taylor & Francis, Google Scholar, Springer Link, B-on, PubMed, Scielo, and RECAAP databases, using the keywords: "psychological adaptation," "cardiovascular disease," "cognitive behavioral therapy," "intervention plan" and "psychological intervention." The search was focused on Portuguese and English written literature published in the last 20 years.

Result and Discussion

The diagnosis of CVD seems to represent, for the individual, a rupture in his biopsychosocial balance, revealing the need to introduce changes in lifestyle and labor activity. The new disease

requirements represent a new reality that imposes the adoption of healthier behaviors [22-25]. CVD causes suffering for patients because it is a severe health condition and because of the various changes in routines and lifestyles, sometimes associated with depressive and anxious symptoms [22,26]. In the adaptation stage to CVD, patients are particularly fragile, not only due to the imminent "threat" of physical death but also to the experience of what could be described as a symbolic death due to: a loss of autonomy, diet changes, possible work leave and loss of control of the situation [27-29]. Each patient develops personal beliefs about CVD, influencing how he responds to therapy [30]. Coping strategies act as a buffer between stress-inducing stimuli, health, and disease when confronted with a disease diagnosis [31]. In this sense, the same author presents three stages of the coping process: 1. Cognitive assessment, 2. adaptive behaviors, and 3. competencies [31]. In the phase of cognitive assessment, the patient proceeds to the evaluation and meaning of the disease, attributing a degree of severity [31].

After this phase, the patient moves on to the next phase, using strategies adapted to his condition [31]. The implementation of coping skills occurs after these phases, chosen based on the initial evaluation made by the patient and the situation [31]. Thus, adapting to the pathology will depend on how the diagnosed person assesses that new circumstance. From a positive point of view, CVD is considered challenging, while from an opposing point of view, the disease is experienced as a threat [32]. The latter can lead to an attitude of acceptance-resignation, while the first relates to a sense of capacity to face the disease [32]. Moreover, there are two types of confrontation: acceptance-resignation and acceptance-renunciation. The first, as previously stated, is beneficial for adapting to CVD. In the case of coping renunciation, this is considered harmful to this process because it can be associated with negative behavior toward health, lower resilience, and delays in asking for help [33-35].

It is essential to consider that CVD is a disease that affects the vascular system and the heart, and societies universally perceive it as the center of emotions and life [22]. Accordingly, when an individual receives the news that his vital organ is sick, this mystification of the heart may influence adapting to it, as it may generate anxiety and fear [22]. According to previous research, psychosocial adaptation to CVD has three phases [36]. The first phase is adaptation, in which the person can accept the disease and everything it entails, together with a good restructuring of his life at the professional, personal, and social levels [31]. The second phase corresponds to the impulsive reaction associated with denial [31]. The third phase of psychosocial adaptation is the regressive one, recognized as one in which the individual cannot overcome fear and succumbs to it, giving rise to a feeling of incapacity and moving away from activities that used to give him pleasure [31]. The reactions of these last phases are ineffective for adapting the individual to his condition, distancing him from strategies that promote changes and benefit his health [31,37]. In assessing the efficacy of an intervention program with patients who have suffered an Acute Coronary Syndrome (ACS), Fernandes [31], they have concluded that the occurrence of this CVD unexpectedly affects the life of the patient and his family [25,31,38,39].

The patient's most common symptoms are fear, anxiety, anger, and depression [38,40]. When the patient tries to manage the situation adaptively, feelings of impotence and disorganization are common because it is a new reality with which the individual does not have the knowledge and strategies to deal [31]. Moreover, anxiety or depression does not contribute to adopting effective adaptive strategies [38,41,42]. In this sense, adjustment is necessary at various levels, namely at the social level, professional, emotional, familiar, and behavioral [31]. When a patient is depressed, adaptation will undoubtedly be more challenging because he will present a posture of disinterest lack of initiative, and the affective/emotional level will be unstable [31]. From a behavioral perspective, a solution for this problem could be strategies for preventing risk factors [37,43]. Thus, the individual's depression response to his pathology could become a risk factor since CVD impacts generations of productive age, such as baby boomers and Generation X. CVD significantly impacts a population that has a strong connection with work from an early age. For this reason, when disease arises at this age, adaptation will require effective coping strategies because labor interruption is sometimes not processed adaptively for financial reasons and impacts the patient's identity [44,45]. For these generations, the emergence of disease could signify the need to stop producing, which has repercussions on feelings of helplessness, a threat to their livelihood, and, in some cases, shame for their inactivity [22,46].

Psychology intervention and adaptation to disease

The advent of an illness in someone's life could indicate a crisis. Thus, the psychologist's work may be necessary at this time to help restore the individual's health, allowing him to balance and cope with his contingencies (Bornho, 2016, [22,47,48]). The great purpose of the psychologist's work is to lead the individual to reestablish his well-being, reduce anxiety and anguish, and encourage emotional expression [22,49,50]. Psychologists can assist the patient in the meaning of the symptoms and consequent expression of their suffering [48]. In addition, it is also essential to work with family members to facilitate interfamily communication and good interaction between them so that they express what they feel during the adaptation process [48]. It is critical to underline that during the psychological intervention process, the client is assured that he is the "subject of his life, not the object of study" [48]. Literature reports three performance levels for the psychologist: the first is psychoeducation, the second is prevention, and the third is psychotherapy [47]. The first level focuses on a more educational perspective where information is transmitted to help the patient reduce stress [22]. It consists of presenting strategies the patient can use to face his CVD and adapt them to his needs [22,51]. At the prevention level, the psychologist's action is directed to a prophylactic intervention where the disease is not yet causing psychological damage [22]. When working with the patient and his family, the main objective is to help reduce the emotional consequences that a CVD causes, namely uncertainty, and promote

strategies that are effective and appropriate for his life context (Alvarez et al. 2006 [31,52]).

In collaboration with the multidisciplinary team, the cardiac rehabilitation process allows the patient to achieve psychological and physical health through specific activities [9,53]. This multidisciplinary team comprises cardiologists, physiotherapists, nurses, nutritionists, psychologists, and social workers. The cardiologist assumes the function of indicating the patient to the intervention program and providing discharge. Physical therapists are responsible for exercise programs, supervising, assisting, and advising patients. As for nurses, they are responsible for the educational component of the disease and monitoring of cardiovascular risk factors. The nutritionist elaborates with the patient a dietary plan appropriate to his condition. Nevertheless, psychologists and psychiatrists seek to "assist psychological problems and stress management to facilitate behavioral changes and assess cognitive changes" [53].

Finally, social workers assist patients in seeking or reintegrating them into work in a way appropriate to their health condition [53]. Without this multidisciplinary team, the rehabilitation process would be poor since all specialties are essential for the patient. Before starting the intervention, it is essential to understand whether the nature of the patient's behavior is reactive or a structural trait because this information determines the plan's orientation and definition of the most appropriate strategies [49]. The process of psychosocial intervention in CVD involves changes in various aspects of the cardiovascular patient's routine and lifestyle, particularly the adoption of healthy behaviors such as physical exercise, dietary changes, and the cessation of risk behaviors such as alcohol and tobacco consumption [31]. It is critical to provide options for coping with the psychological impacts of CVD that do not rely on pharmacological [31,54]. One example is the use of physical and aerobic exercises that prove to be as effective as pharmacological treatment and are assumed to be more sustainable given their low cost and promotion of self-care [55,56]. According to the literature, the intervention can be individual or group. When performed individually, there are focuses of intervention, such as the emotional state, the family structure, stressor events, the social support network, coping strategies, and self-esteem (the psychosocial factors;[57]). In a group, the aim is to instill the resources and perception of control of the pathology so individuals can face it adaptively [31]. The group modality could be beneficial since individuals may share their fears about CVD and prepare emotional space for interpersonal support [31].

Theoretical approach: Cognitive behavioral therapy

Cognitive Behavioral Therapy (CBT) was the first method of psychotherapy presented by scientific literature as effective for intervention with cardiovascular patients [58]. It has a simple methodology, quick initiation, and short duration and is characterized as holistic by addressing aspects that drug therapy cannot respond to [59]. Still, despite brief intervention, the results can be maintained beyond the intervention period [60]. CBT sessions with cardiovascular patients are given by psychologists working in a multidisciplinary context, together with a team of nurses and cardiologists, physiotherapists, social workers and nutritionists [61]. The intervention can be performed individually, online or in groups [62-64]. Individual or group therapy is the most commonly employed modality with cardiovascular patients, and as previously indicated, the latter fosters peer support, confirming the intervention's outcomes [59,65]. Hence, CBT strives to support patients in reducing psychological distress and increasing adaptive behaviors by encouraging pleasure activities, promoting social interactions, confronting self-critical and reshaping negative thoughts [66,67]. Cognitive and behavioral strategies include exercises of relaxation, cognitive restructuring, emotional regulation, and problem-solving [66]. The cognitive principle is that "emotional and behavioral responses, as well as our motivation, are not directly influenced by situations, but [...], by the interpretations we make of these situations or by the meaning we attribute to them" [68]. In turn, the patient's meanings of his disease represent automatic thoughts that eventually activate his system of beliefs and schemes [68]. In this process, coping strategies focused on the problem or emotions prepare the subject to deal with his stress event [31]. When the focus is on the problem, it is aimed at modifying the current conditions to reduce the psychological pressure and to see a change in lifestyles [31]. On the other hand, when the focus is on emotions, it is intended to regulate them; therefore, coping strategies are aimed at reducing the stress experienced [31].

Therefore, CBT focuses on modifying irrational thoughts and beliefs so that the patient can adopt an adequate behavioral response to his condition, moving away from negative emotions [69]. For this, 'is widely used, according to which stress-activating events are first to be identified, moving to identification and understanding of the belief about it and ending with an exploration of emotional and behavioral consequences arising from previously identified beliefs [59]. Through CBT, cardiovascular patients are oriented to improve their self-management skills, understanding which behaviors compromise their recovery and which must be changed to achieve the best adaptation and prevention of CVD [59]. The psychologist's role consists in assisting the patient in a safe and secure therapeutic context of confrontational strategies so that he can change his perception of the disease and the stress that comes from it [70]. With follow-up, the patient can look for more effective ways to face their situation [70]. This confrontation of beliefs is hugely relevant because it allows the patients to counter their negative feelings and the perception that they are incapable of the notion of self-efficacy and feelings of competence [71].

It is common for patients to feel stressed about the whole situation, and CBT seeks to raise awareness of this stress, encourage the practice of relaxation exercises, and help identify dysfunctional thoughts [72]. Furthermore, expressing these thoughts is beneficial for emotional regulation to change attitudes toward life and goals [73]. The practical strategies CBT uses, control stress levels, breathing exercises, psychoeducation, and meditation programs can be highlighted [74]. Li & Colleagues [75] found that patients suffering from hypertension are more responsive to interventions based on cognitive strategies, thus decreasing the levels of anxiety

and depression. However, it has been reported that passive (e.g., lying down) and intellectual (e.g., writing) strategies are, in CVD patients, more associated with negative emotions [76]. On the other hand, physical strategies (such as "walking in the street" and "walking in the park") were identified with positive emotions. [76]. For cardiovascular patients, physical activity is essential to increase their sense of self-care and well-being [77].

This positive association between physical strategies and cardiovascular patients is justified by the fact that they attribute an active role to the patient in his self-care [76]. Concerning intellectual strategies, their negative association with obtaining results may be related to the fact that cardiovascular patients are mostly older and may have cognitive limitations that lead them to choose less complex regulation strategies [78]. Therefore, previous investigations reported that CBT obtains positive results for cardiovascular patients because it moves them to adopt healthy eating plans and eliminate risk behaviors [75,79]. Emotional regulation is also achieved positively through this psychological intervention [75]. Another issue is that CBT is as effective as pharmaceutical therapy in reducing depression and anxiety symptoms [68]. Thus, it is feasible for the patient to achieve a homeostatic relationship between his life and health [70].

Conclusion

The emergence of a disease in a person's life is undoubtedly a crisis for the individual and his family. It requires a readjustment of his reality and lifestyle. Therefore, in the face of any change, adaptation is required [80-88]. CVD is mainly prevalent in older generations, so some aspects must be considered. Family and professional issues, particularly those involving financial support, are big problems for these generations and, as a result, critical elements for the patient's adaptation. Through the rapid literature review, it was possible to verify that the adaptation process essentially involves helping the cardiovascular patient to reduce the fear, anxiety, and depression manifested as a response to the necessary changes in their lives [66,69,70].

Consequently, the strategies used are preventive tasks of risk factors associated with CVD, and part of the disease adaptation process is prevention. The importance of psychological intervention in this context is not only due to the need to assist individuals in a new situation, which implies new contexts, but also has an environmental and economic weight. At the environmental level, the success of the intervention plan would contribute to the reduction of pharmacology use to the extent that individuals would be endowed with coping strategies. As a result, there would be an economic impact, as less drug usage would result in lower economic expenditure, as would the need for medical services. The costs associated with cardiovascular diseases per year are very high compared to the Heal National system. In addition, multidisciplinary work is essential for the intervention process to be holistic and cover the different dimensions of cardiovascular disease. To this end, multidisciplinary work occurs through the intervention of each specialist simultaneously with psychological intervention. Recent literature points out that psychological support is necessary for the patient to face his condition, understand it, and seek to reduce his suffering [48].

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