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EXPLORING THE EFFICACY AND FEASIBILITY OF LIFESTYLE INTERVENTIONS AND STRESS MANAGEMENT TECHNIQUES, IN MANAGING AND PREVENTING CARDIOVASCULAR DISEASES

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ABSTRACT:

Introduction: Cardiovascular diseases (CVD) constitute a significant burden on healthcare systems worldwide, given their chronic nature and high mortality rates. Despite advancements in technology and clinical understanding, the psychological dimensions of CVD remain relatively understudied.

Objective: This research aims to ascertain the prevalence of psychological disturbances among patients receiving outpatient treatment for CVD.

Methods: A descriptive-quantitative cross-sectional study was conducted, utilizing instruments such as a sociodemographic questionnaire, the Brief Symptom Inventory (BSI), the Beck Depression Inventory (BDI-II), and the Brief Cope Scale. Data were collected between March and April 2022 at the outpatient clinic of Hospital Estadual de Urgências de Goiás Dr. Valdomiro Cruz. Descriptive statistics, including absolute and relative frequencies, means, medians, and standard deviations (SD), were employed to analyze sociodemographic and clinical variables.

Results: The study revealed a notable prevalence of psychological symptoms among patients undergoing outpatient treatment for cardiovascular disease. Predominant symptoms included psychoticism, anxiety, and depression, while instrumental support, emotional support, and religiosity emerged as primary coping strategies.

Conclusion: Psychological symptoms, notably psychoticism, anxiety, and depression, are prevalent among patients undergoing outpatient treatment for cardiovascular disease. Understanding and addressing these psychological aspects are crucial for comprehensive patient care and improved treatment outcomes.

Keywords: Cardiovascular Diseases; Psychological Stress; Psychological Adaptation.

INTRODUCTION:

So-called cardiovascular diseases (CVD) are characterized by disorders of the heart and blood vessels, including stroke and coronary artery disease (CAD). They can be caused by a combination of socioeconomic, behavioral, and environmental risk factors, including high blood pressure, unhealthy diet, high cholesterol, diabetes, air pollution, obesity, tobacco use, kidney disease, physical inactivity, harmful use of alcohol, and stress (Kovacs et al., 2024; Rogerson et al., 2024).

Lifestyle modifications and the control of modifiable risk factors, i.e. those on which the patient and the healthcare team can act, such as dyslipidemia, obesity, diabetes mellitus, smoking, sedentary lifestyle, among others, are considered the basis of treatment and control of cardiovascular diseases if they require multidisciplinary care at all levels of healthcare, mainly in primary care (Nathani, Vogel, & Mehran, 2024).

According to the World Health Organization (WHO), cardiovascular diseases are the leading cause of death in the world: an estimated 17.9 million people died from cardiovascular diseases in 2019, equal to 32% of all global deaths. Approximately 45% of all deaths due to chronic noncommunicable diseases (NCDs) worldwide, more than 17 million, are caused by cardiovascular diseases. The same happens in Brazil, where 72% of deaths are due to noncommunicable diseases, 30% to cardiovascular diseases, 16% to cancers and 6% to respiratory diseases (Nelson, Pagidipati, & Bosworth, 2024).

The socioeconomic impact of chronic diseases is increasing, as they are considered a global public health problem. In addition to premature deaths, noncommunicable diseases are responsible for work incapacity, reduced family income and reduced productivity6. In Brazil, CVDs were responsible for the most significant direct expenses, including hospital admissions and indirect costs due to reduced productivity due to absence from work. Cardiovascular diseases and their complications cost the Brazilian economy $4.18 billion between 2006 and 2015 (Ebrahimi et al., 2024; Jutterström, Stenlund, Otten, Lilja, & Hellström Ängerud, 2024).

Health promotion highlights the balance between physical, psychological and social health and well-being. The concept of health has been broadened by incorporating psychosocial (socioeconomic, environmental and behavioral) factors that influence individual and collective health. An individual's psychosocial well-being may be challenged by physical illness; at the same time, the ability to mobilize internal psychological and social sources may have several implications for the success of his or her ability to cope with illness (Kayhan & Nural, 2024).

The macro social impacts caused by chronic disease diagnosis are innumerable. However, in the microsocial sphere, patients, based on this diagnosis, need not only to adapt to the immediate behavioral changes that each treatment requires but also to address the emotional and social aspects that permeate and influence the entire process of adaptation (Charchar et al., 2024).

Regarding this aspect, it is known that psychological demands such as stress, depression and anxiety are common and recurrent in chronically ill patients and their family members or primary caregivers (Ivynian, Ferguson, Newton, & DiGiacomo, 2024).

In this context, the relevance of the role and performance of healthcare workers, particularly psychologists, who assist these patients in the most diverse healthcare contexts, both within basic healthcare units and hospitals and within organizations or institutions. In the field of health psychology, efforts have been made to understand and investigate risk not only factors or those associated with disease progression but also protective factors and predictive health behaviors aimed at maintaining, promoting health, and preventing disease as well as treating, rehabilitating and alleviating the consequences of these diseases in patients already affected (McKechnie et al., 2024).

Regarding coping strategies, it can be defined as a set of cognitive and behavioral strategies developed by people to cope with the internal and external demands of the relationship between the individual and the environment. These strategies are linked to mental health, as they can moderate the impact of adversity throughout life, increase levels of psychological well-being, and reduce suffering (Khedr, Ali, Sanhoury, & Hussein, 2024).

The primary goal of the healthcare industry is to determine how to improve the ability of patients and their families to cope effectively with the sources of stress they face. By knowing the coping strategies and their effect on the individual and relating them to the context, it becomes possible to identify the internal and external resources available and improve the individual's ability to better deal with situations, considering both the illness and his personal needs (Chair et al., 2024).

METHODOLOGY:

The Research Ethics Committee (CEP) of the Hospital Estadual de Urgências de Goiás Dr. Valdomiro Cruz (HUGO) approved this cross-sectional, descriptive-quantitative study. The procedures were by Resolution n° 510/2016 of the National Health Council (CNS) (Sidik et al., 2024).

The convenience sample consisted of 17 patients with cardiovascular syndromes monitored at the HUGO cardiac outpatient clinic. The inclusion criteria were patients of both sexes with cardiovascular syndromes treated at the cardiology outpatient clinic and over 18 years of age. Exclusion criteria were patients who were not physically or clinically able to understand verbal commands or had mental and linguistic problems, resulting in communication difficulties between the researcher and participants (Hege, 2024).

To develop the research, it was necessary to use the following tools: a sociodemographic questionnaire, with multiple choice and single answer questions on sex, age, diagnosis, color/race, marital status, religion, education, profession, federation unit and clinical data; The Brief Symptom Inventory (BSI), which is a self-report instrument, includes 53 items organized into 9 dimensions (Somatization, Obsessive-Compulsive, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation and Psychoticism); Beck Depression Inventory (BDI-II), a 21-item composite instrument whose objective is to measure the intensity of pressure; Brief Cope Scale whose objective is to evaluate thoughts and behaviors that people use to deal with the internal or external demands of a specific stressful event (Albus, 2024; Kirkbride et al., 2024).

The scale can determine someone's primary coping styles with scores on the following subscales: Self-distraction, Active coping, Rejection, Substance use, Emotional support, Instrumental support; Behavioral disinvestment, Vent, Positive reinterpretation; Planning, Humor, Acceptance, Religion and Self-blame (Karthikeyan, 2024).

Data collection took place between March and April 2022. The sample was subjected daily to active research systematization through the electronic medical record. The questionnaires were applied individually by a single examiner, who followed standardized instructions according to the original version of the instrument. Participants were informed about the purpose of the assessment and instructed on how to respond to the instrument. Each meeting lasted 30 to 45 minutes (Gianfredi et al., 2024).

The demographic and clinical profile of the patients was characterised using absolute frequency, relative frequency, mean and standard deviation, median, minimum and maximum. Data anomaly was tested using the Shapiro-Wilk test. The instruments were tested using Pearson correlation analysis. The data were analyzed with the help of the Statistical Package for Social Science (IBM Corporation, Armonk, USA) version 26.0. The significance level adopted was 5% ($p < 0.05$) (Amu et al., 2024).

RESULTS:

The distribution by diagnosis, sex, age group, skin color, marital status, profession, education, religion, origin and use of chemical substances is shown in the table below (Table 1). The research instruments were applied to a total of 17 subjects, and since the calculated sample was 100 subjects, there was a sample loss of 83% (n = 83). This number is due to environmental difficulties (access to a physical space, furniture and impediment to other specialities to access the patient), sampling (patients with a low level of education and who had limited knowledge of research tools) and time (time data collection established by the researcher) (Pouwer et al., 2024).

No statistically significant differences were observed regarding diagnosis, age group, marital status, profession, religion, education and origin. However, it is worth underlining that the results reveal a

sample predominance of robust people equal to 52.9% (n=9). Furthermore, the clinical data of the patients indicate that 23.5% (n=4) use cigarettes, 47 1% (n=4) = 8) use alcohol, and 29.4% (n = 5) continuously use anxiolytics and antidepressants (Pearsons, Hanson, Hendriks, & Neubeck, 2024).

	n	**%**
Diagnosis		
Arrhythmia	4	23.5
Cardiomyopathy	2	11.8
Heart attack	3	17.6
Cardiac insufficiency	2	11.8
Others	6	35.3
Sex		
Feminine	9	52.9
Masculine	8	47.1
Age range		
18 to 28 years	3	17.6
29 to 39 years	2	11.8
40 to 50 years	1	5.9
51 to 61 years	4	23.5
62 to 72 years	5	29.4
Over 73 years old	2	11.8
Cordapele		
White	4	23.5
black	4	23.5
Brown	9	52.9
Marital status		
Married	7	41.2
Single	6	35.3
Widower	4	23.5
Occupation		
Retiree	5	29.4
Autonomous	2	11.8
Unemployed	3	17.6
Dollar	2	11.8
Employee	5	29.4
Education		
Elementary School	10	58.8
High school	7	41.2
Religion		
Without religion	3	17.6
Catholic	7	41.2
Evangelical	7	41.2
Origin		
capital	7	41.2
Interior of the State	5	29.4
Another state	5	29.4
I use cigarette		
Yes	4	23.5
Alcohol use		

Yes	4	23.5
Use of other drugs		
Yes	2	11.8
Anxiolytic use		
Yes	5	29.4
Antidepressant use		
Yes	5	29.4

***Table 1**-Characterization of the demographic profile and clinical data (n= 17).*

Table 2 shows the results found regarding the patterns of psychological symptoms. Descriptive statistical analysis of research instrument scores indicates a substantial prevalence of psychological changes among patients. The mean BDI-II score was 19.82, representing a moderately depressed classification (Christogianni, 2025).

The mean score on the BSI positive distress symptoms index was 59.88, corresponding to an average score. Participants' average global severity index was 65.76, reflecting a high score. It is possible to verify that all psychological symptoms are predominantly present, mainly psychoticism, anxiety and depression (Lee et al., 2024).

The findings also indicate that the coping styles used most frequently by participants were instrumental support, emotional support, religiosity and planning (Abdelwahed, 2024).

	Mean±SD
BDI-II	
Total Score	19.82± 7.92
BSI	
Somatization	58.65± 15.80
Obsessive-Compulsive	58.00± 10.99
Interpersonal Sensitivity	57.47± 9.91
Depression	64.00± 10.89
Anxiety	67.18± 12.65
Hostility	54.76± 12.41
Phobic Anxiety	57.18± 9.63
Paranoid Ideation	55.12± 12.08
Psychoticism	67.41± 10.43
Global Gravity Index	65.76± 9.56
Index of Positive Symptoms of Distress	59.88± 7.83
Total Positive Symptoms	64.47± 9.55
COPEbrief	
Self-distraction	2.97± 0.89
Copingative	3.06± 0.75
Denial	2.41± 1.03
Substance use	2.41± 1.24
Emotional support	3.29± 1.00
Instrumental support	3.59± 0.83
Behavioral divestment	1.44± 0.53
Vent	2.50± 1.29
Positive reinterpretation	2.76± 0.92
Planning	3.09± 0.73
Humor	1.44± 0.86
Acceptance	2.21± 0.88

Religiosity	3.21± 1.08
Self-blame	2.12± 1.04

Table 2*. Descriptive statistics of BDI-II, BSI, and BriefCope scores (n = 17).*

Table 3 shows the result of the correlation analysis between BDI-II and BSI and the BriefCope scale. The data indicate a positive correlation between the high degree of psychological symptoms and substance use ($p<0.01$). Furthermore, the results suggest a negative correlation between the patterns of psychological symptoms and the coping strategy of acceptance ($p=0.02$) (Hahad et al., 2024).

	BDI-II	
	r	**p**
BSI		
Somatization	0.05	0.84
Obsessive-Compulsive	0.14	0.60
Interpersonal Sensitivity	**0.50**	**0.04**
Depression	**0.82**	**0.00**
Anxiety	0.28	0.27
Hostility	0.23	0.37
Phobic Anxiety	0.15	0.57
Paranoid Ideation	0.32	0.20
Psychoticism	**0.66**	**0.00**
Global Gravity Index	**0.61**	**0.01**
Index of Positive Symptoms of Distress	0.43	0.09
Total Positive Symptoms	**0.57**	**0.02**
COPEbrief		
Self-distraction	0.27	0.30
Copingative	0.30	0.24
Denial	0.14	0.60
Substance use	**0.70**	**<0.01**
Emotional support	0.28	0.28
Instrumental support	0.24	0.34
Behavioral divestment	-0.19	0.46
Vent	-0.02	0.95
Positive reinterpretation	-0.05	0.85
Planning	0.10	0.71
Humor	-0.04	0.88
Acceptance	**-0.56**	**0.02**
Religiosity	-0.13	0.61
Self-blame	0.20	0.43

Table 3. *Result of correlation analysis between BDI-II and BSI and BriefCope scale.*

DISCUSSION:

The present study revealed a prevalence of psychological changes among patients with cardiovascular disease undergoing outpatient treatment. The main psychological symptoms highlighted were psychoticism, anxiety and depression. Generalized Anxiety Disorder (GAD) is characterized by the presence of excessive anxious symptoms on most days for several months. The person is distressed, tense, worried, permanently nervous or irritated. Symptoms such as insomnia, difficulty relaxing, constant anxiety, increased irritability and difficulty concentrating are common (Rahman et al., 2024). On the other hand, depressive conditions are characterized, from a psychopathological point of view, by the presence of a sad mood in the volitional sphere and discouragement. In severe cases, psychotic symptoms (delusions and hallucinations) and psychomotor alterations may also be present forms of depression (Griffiths et al., 2024).

The prevalence of depression in patients with cardiovascular disease is double that of the general population. In Brazil, the prevalence of blood pressure is between 5.8% and 17% of the population compared to 4.4% of the world population. Depression is not just a late effect of a heart disease diagnosis; instead, it is an independent risk factor that likely has genetic and environmental causes. However, depression remains an underdiagnosed and undertreated condition in many people with cardiovascular disease (Sampogna et al., 2024; Sur, Kozberg, Desvigne-Nickens, Silversides, & Bushnell, 2024).

Karatas et al. conducted a case-control study to investigate the relationship between anxiety, depression, general psychological disorders and slow coronary flow (SCF). To this end, 44 patients with LCF (experimental group) and 50 patients with normal coronary flow (control group) participated. The main finding of the study was that patients with LCF had significantly higher levels of depression, anxiety and general psychological distress compared to patients with normal coronary flow (Dennis & Zolnikov, 2024).

To understand the meanings attributed to heart disease by pre-operative patients undergoing outpatient follow-up, Wottrich et al. Concluded that, for participants, heart disease was represented by the inability to lead an everyday life. The authors highlighted in the patients' speech an extreme impotence and expropriation of their bodies, which could generate a process of depersonalization (McIntyre, Kwan, Rosenblat, Teopiz, & Mansur, 2024).

The practice of psychological counselling within cardiology is broad and diverse, ranging from screening for psychosocial risk factors to emotional support related to diagnosis, surgical procedures and treatment to counselling for treatment engagement (adherence) or assistance in changing risk behaviours associated with cardiovascular disease and Health problems (Das & Fatima, 2024).

The psychologist, with careful listening and an emotional care protocol that takes into account these emotional and psychosocial risk factors, can act preventively and avoid further emotional and clinical damage to the patient or minimize them, thus creating a complete psychosocial care process focused on the relevant aspects topics for patients with cardiovascular disorders (Sanzone & Sammons, 2024).

According to survey data, the prevalence of cardiovascular disease also varies across racial and ethnic groups. The results revealed a predominance of 52.9% (n = 9) in large-bodied people. According to Straub, economic factors may contribute to these differences. People with low socioeconomic status tend to have more risk factors for cardiovascular disease, including high-fat diets, smoking and stressful experiences (Cozma, Siatra, Bornstein, & Steenblock, 2024).

Patient clinical data also showed a significant correlation between cigarette and alcohol use and cardiovascular disease. According to Straub, smoking doubles the risk of heart attack and is linked to 1 in 5 deaths from coronary heart disease. Smokers have double the risk of stroke and are less likely to survive a myocardial infarction than nonsmokers (Matthias et al., 2024).

A large study conducted by Yusuf et al., INTERHEART, sought to evaluate the importance, strength of association, and variability (across geographic regions, by ethnic origin, sex, or age) of risk factors for the development of cardiovascular disease on different continents. Nine risk factors linked to first Acute Myocardial Infarction (AMI) and other heart diseases were examined, namely smoking, hypertension, lipids, diabetes, obesity, diet, physical activity, alcohol consumption and psychosocial factors. Obtained from 12,461 thousand people diagnosed with AMI and 14,637 individuals without a diagnosis, selected in 52 different countries. The research showed that hypertension, diabetes, obesity, smoking and psychosocial factors were found to be the most critical risk factors in all regions examined (Kim, 2024; Tenchov, Sasso, Wang, & Zhou, 2024).

The findings also indicated that the main coping strategies used by research participants were instrumental support (seeking help, information, or advice on what to do), emotional support (getting sympathy or emotional support from someone), and religiosity (increased participation in religious activities). The hospital context has particular characteristics and contains some borderline situations, such as life/death and health/illness, which influence the patient's well-being and can generate stress and illness (Horsch et al., 2024; Zaretsky et al., 2024).

It is, therefore, understood that the patient's health greatly influences the relationships the patient will establish in the institution and with the professional team. Therefore, identifying stressful events and coping methods that generate physical and psychological symptoms is of great importance to understand how these patients cope with adverse situations and how this affects their health (Burback, Brult-Phillips, Nijdam, McFarlane, & Vermetten, 2024)

CONCLUSION:

The present study revealed a prevalence of psychological changes among patients with cardiovascular disease without outpatient treatment. In this context, healthcare professionals face an essential task: promoting access to and improving mental health care. Despite consolidated knowledge, progress in developing effective prevention and intervention strategies that mitigate the impact of stress and other psychosocial risk factors for cardiovascular disease is still limited. The continuous evaluation of these risk indicators and the benefits of psychological intervention in this context should be priority objectives for research in psychology and cardiology.

The practice of psychological assistance based on scientific knowledge and clinical research facilitates the development of adequate protocols for each health-disease process and favors more complete and humanized assistance, which allows us to optimize both the treatment of cardiovascular diseases and the actions of prevention and health promotion for the population.

Finally, it is worth highlighting that the BSI instrument was designed to reflect the state of psychological symptoms of psychiatric patients and patients in general but lacks studies focused on Brazilian normative samples. Considering the instrument's versatility and reliability, it is essential to develop new research with a typically Brazilian sample.

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