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Assessment of Cardiovascular Disease–Related Distress and Psychological Determinants: A Review

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Abstract:

Cardiovascular disease (CVD) is the most prevalent cause of morbidity and mortality all over the world and has been observed to be affected by not only biological factors, but also psychological factors. Complex neuroendocrine, autonomic, inflammatory and behavioral mechanisms play a major role in influencing cardiovascular outcomes due to psychological distress, such as depression, anxiety, chronic stress, maladaptive personality traits, and social isolation. These play a role in low medication adherence, unhealthy lifestyle habits, less engagement in cardiac rehabilitation, and high chances of cardiovascular reoccurring events and death. This review unites existing information on the conceptual model, epidemiology, and psychological factors that cause distress associated with CVD and validated measures of distress and pathophysiological mechanisms. Assessment techniques that are multidimensional and which include self-report questionnaires, clinical interviews, disease-specific scales, quality-of-life scales, and biomarkers are needed to identify and track distress in patients of cardiac origins. The clinical implication of the review is that incorporation of psychosocial screening and interventions such as cognitive-behavioral therapy, stress management techniques, pharmacotherapy, and multidisciplinary care models into the mainstream cardiovascular care should be considered. Although the mind-heart relationship is increasingly being acknowledged, there are knowledge gaps in the areas of standardized assessment, longitudinal evidence, and research concerning different cultures. The research needs to strive further in future by investigating large-scale, combined care intervention and individualized modifications to enhance the results. Altogether, psychological distress is an important element of cardiovascular care that should be addressed in order

to improve prognosis, quality of life, and comprehensive and patient-centered management of people with CVD.

Keywords: *Cardiovascular disease, psychological distress, depression, anxiety, cardiovascular outcomes, psychosocial factors, assessment tools, biopsychosocial model, cardiac rehabilitation, patient-centered care*

1. Introduction

Cardiovascular disease (CVD) is the most common cause of morbidity and mortality in the world and one of the major challenges to public health in various socioeconomic environments. Being caused by a complicated combination of biological, behavioural, and environmental risk factors, including high blood pressure, diabetes, dyslipidemia, overweight, tobacco consumption, sedentary lifestyle, and ageing of the population, CVD involves coronary artery disease, heart failure, arrhythmias, and cerebrovascular disorders. In spite of the improved pharmacotherapy, interventional cardiology, and preventive interventions, recurrent events, disability, and a decreased quality of life remain a challenge(1). Other than its physiological consequences, CVD is becoming more and more an issue that is inextricably linked to psychological well-being. The nature of the cardiac diagnosis experience, the acute conditions, including myocardial infarction, and the need to manage the disease long-term often leave a considerable emotional pressure. Fear of recurrence, uncertainty about prognosis, perceived loss of functional capacity and fear of dependency and financial stresses are some of the issues that are frequently reported by patients. The prevalence of depression and anxiety is significantly greater in people with cardiovascular diseases than in the general population, and even the existence of subclinical manifestations of emotional distress has been linked to worse medication adherence, poor lifestyle habits, less frequent participation in cardiac rehabilitation, and increased likelihood of experiencing adverse outcomes(2). Notably, the psychological load of CVD does not pertain only to the formal psychiatric conditions; most people face disease-related depression, a concept that defines the emotional and cognitive load that relates specifically to living and coping with a chronic heart disease. Such distress can involve the frustration of lifestyle constraints, excessive attention to body feelings, catastrophicization of symptomatology, and trouble adjusting to persistent treatment imperatives. Though different to major depressive disorder or anxiety disorder, chronic illness-related distress may worsen physiological mechanisms (e.g. autonomic imbalance, activation of the hypothalamic-pituitary-adrenal axis, systemic inflammation, platelet aggregation, etc.) and lead to disease progression and higher risk of mortality(3). Limited support networks, loneliness, and socioeconomic disadvantage are additional social factors that increase cardiac populations' vulnerability to psychological distress. Although recognition of these associations is increasing, studies testing cardiovascular disease-related distress are both incomplete, and there are disparities in the conceptual definitions and methodologies of assessment, stemming from which, the translation of studies into clinical practice is blocked. Although many studies have assessed depression and anxiety among cardiac patients, limited research has synthesised the evidence on illness-specific distress and its psychological determinants(4). As a result, the urgent necessity to combine existing knowledge, to make some conceptual differences, and to test the validated assessment instruments, which could be incorporated into the normal cardiovascular care, appears. The current review will attempt to conduct a synthesis of the current literature on CVD-related distress, analyse the most important psychological factors that contribute to cardiovascular outcomes, review the tools for measuring the specific information in research and clinical settings, and investigate the biological and behavioural processes that may mediate the effects of affective factors on cardiac health. The review is aimed at contributing to the creation of the integrated, patient-centred strategies and approaches that can deliver the solution to the physiological and psychological aspects of cardiovascular disease(5).

2. Epidemiology and Clinical Overview of Cardiovascular Disease

Cardiovascular disease (CVD) is the number one cause of mortality in the world and it is a significant and increasing risk to the entire public health in different socioeconomic environments. The growing old of the population, rapid urbanization, and the introduction of sedentary lifestyles, unhealthy dietary trends, the use of tobacco, and the escalation of hypertension, diabetes, obesity, and dyslipidemia have contributed to the increasing global burden of CVD(4). Despite the progress made in high-income nations to reduce mortality in people of all ages due to the improvement of prevention and early diagnostic methods and the development of more effective treatment options, the incidence and mortality rates keep rising in low- and middle-income countries, frequently aggravated by the lack of healthcare access and timely diagnosis. CVD is a heterogeneous group of diseases that involve the heart and vascular system such as coronary artery disease, heart failure, stroke as a cerebrovascular disease, peripheral arterial disease, and cardiac arrhythmia such as atrial fibrillation(6). Of these, coronary artery disease is the most common and a significant factor that causes myocardial infarction and sudden cardiac death, whereas heart failure is a chronic progressive disorder that leads to hospitalizations and functional impairment. Improvements in the pharmacological treatment, revascularization techniques and risk factors management have enhanced cardiovascular accident survival, but have also contributed to a higher population with chronic cardiovascular disease and morbidity. As such, morbidity is high; and a high number of patients are recurrently affected, disabled, and having low physical endurance. In frightening numbers, CVD has severe consequences on quality of life, not only concerning disease mortality but also in physical, emotional, and social aspects(7). The presence of symptoms like fatigue, dyspnea, chest pains, and mobility impairments limit daily activities and work ability, and the psychological burden of dealing with a chronic life-threatening condition will add to the anxiety, depression, and distress associated with the disease. Re-experiencing, lack of information on the prognosis, and restrictions of lifestyle further affect overall well-being. Notably, the lower health-related quality of life has been linked with increased rehospitalization and mortality rates, highlighting the importance of the holistic management strategies. Therefore, the epidemiology, clinical spectrum, mortality patterns as well as quality-of-life implications of cardiovascular disease need to be comprehended to come up with integrated approaches that not only focus on survival but long term functional and psychosocial outcomes(8).

3. Conceptual Framework of CVD-Related Distress

Cardiovascular disease (CVD) -related distress is a multidimensional construct that includes both of the emotional, cognitive, behavioral, and social issues that are specifically related to living with and managing a cardiac condition. This is in contrast to generalized psychiatric disorders which are contextual and are a result of illness related issues like fear of recurrent cardiac events, lack of prognosis, burden of medication, restriction of lifestyle and perceived loss of functional capacity(9). It exists in a continuum where it involves short-term adjustment responses after a diagnosis and chronic emotional distress that disrupts compliance, recuperation, and quality of life. In spite of the common

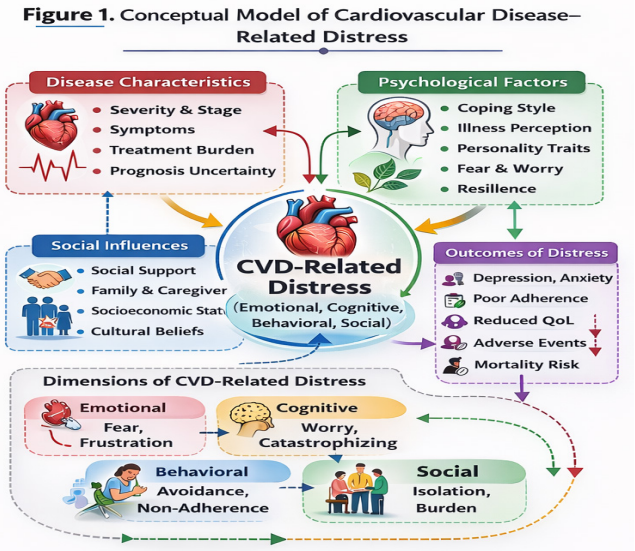

Figure 1:
Conceptual Model of Cardiovascular Disease–Related Distress

features of CVD-related distress with depression and anxiety: fatigue, sleep disturbance, excessive worry, etc., it can be regarded as a conceptually different and distinct category of distress, as the core focus is not on the pathology of the mood or anxiety, but on illness management. Major depressive disorder and anxiety disorders also have diagnostic criteria which presuppose the use of structured psycho-therapeutic or pharmacological measures, whereas illness-specific distress can be addressed by psychoeducation, training in coping skills, and supportive cardiac rehabilitation(10). As shown in **Figure 1**, CVD-related distress is compacted in an interactive model that incorporates the attributes of the disease (e.g., severity and symptom load), personal psychological factors (e.g., coping style, illness perception, personality factors), and social factors (e.g., support systems and socioeconomic context). Theoretical schools of thought including cognitive appraisal theory, the stress-diathesis model and self-regulation theory also elaborate how individual explanation of illness and prior vulnerability condition influence emotional reactions and behavioral reaction(11). The biopsychosocial model builds on this view and sees cardiovascular health as the result of interactive processes between biological processes, psychological conditions, and social conditions. Neuroendocrine and autonomic responses can be stimulated by psychological distress, leading to more intense sympathetic activity, cortisol release and systemic inflammation, which can hasten atherosclerosis and worsen cardiac performance, whereas social support can moderate stress and turn the individual resilient. The interdependence of these mechanisms is illustrated in **Figure 2** and shows how the emotional factors impact the processes of physiological regulation and the health behaviors that eventually have an impact on the cardiovascular prognosis. Combining these theoretical and conceptual frameworks supports the need to provide comprehensive cardiovascular care that does not necessarily depend on biological pathology but rather on the psychological health and social background(12).

4. Psychological Determinants of Cardiovascular Disease

The role of psychological determinants has a critical effect on the cardiovascular disease (CVD) outcomes via interdependent and multifaceted biological and behavioral pathways. Depression is one of the most widely researched determinants, which has been substantially linked to morbidity and mortality among cardiac populations, in part because of dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis, systemic inflammation, platelet activation, and autonomic imbalance(13). Besides these physiological processes, depression also leads to maladaptive health behaviors including low levels of medication adherence, physical inactivity, and unhealthy eating habits thus adding to cardiovascular risk. Anxiety disorders also produce

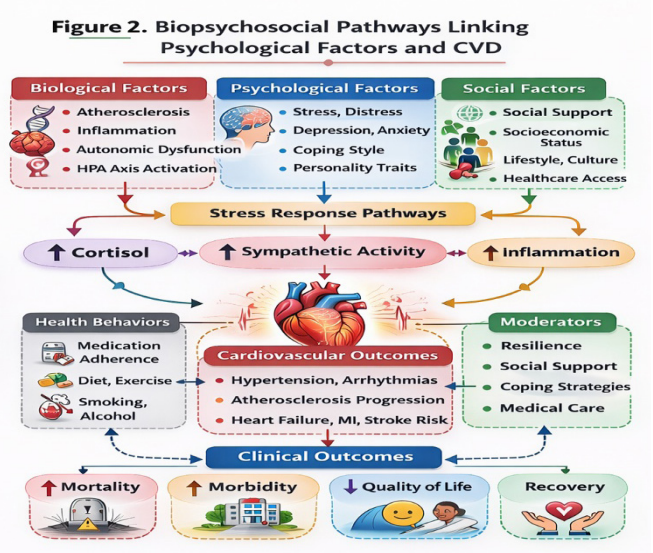

Figure 2: Biopsychosocial Pathways Linking Psychological Factors and CVD

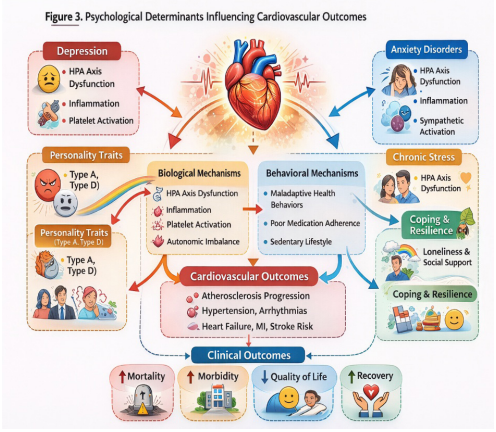

Figure 3: Psychological Determinants Influencing Cardiovascular Outcomes

a similar impact on cardiovascular functioning increasing sympathetic nervous system activity, increase heart rate and fluctuation of blood pressure and hypervigilance to body symptoms, which can result in avoidance of physical activity and poor rehabilitation. Circumstant stresses and negative experience of life contribute to a further increase in cardiovascular fragility since they maintain cortisol release, increase inflammatory factors, and speed up atherosclerotic processes(14). The emotional reactivity and coping responses are influenced by personality, namely Type A (hostilities and time urgency) and Type D (negative affectivity and social inhibition), which have an effect on physiological stress responses and health-related actions. Social support works as an essential moderating influence; socially supported individuals have shown higher compliance to treatment and better recovery compared to those who are lonely and socially isolated; social isolation and loneliness are associated with higher cardiovascular morbidity and mortality(15). The level of adjustment to illness-related problems also depends on coping mechanisms and resilience, and adaptive coping has a positive outcome and maladaptive strategies worsens the development of the disease. These psychological determinants are mediated to the cardiovascular outcomes by overlapping biological and behavioral pathways as summarized in **Table 1** whilst **Figure 3** visualizes its dynamic interactions and cumulative effects on clinical outcomes including mortality, morbidity, and quality of life. Collectively, the evidence highlights the need to incorporate psychosocial assessment and intervention to integrated cardiovascular care models(16).

Table 1: Summary of Major Psychological Determinants and Their Cardiovascular Impact

Psychological Determinant	Key Characteristics	Biological Mechanisms	Behavioral Pathways	Cardiovascular Impact
Depression	Persistent low mood, anhedonia, fatigue, hopelessness	HPA axis dysregulation, inflammation, platelet activation, autonomic imbalance	Poor medication adherence, physical inactivity, smoking, unhealthy diet	Increased risk of atherosclerosis, recurrent MI, heart failure progression, higher mortality
Anxiety Disorders	Excessive worry, hyperarousal, fear of recurrence	Sympathetic overactivation, elevated BP variability, reduced heart rate variability, inflammation	Avoidance of physical activity, poor rehabilitation participation	Increased arrhythmias, ischemic events, hospitalization risk
Chronic Stress & Life Events	Occupational stress, financial strain, caregiving burden	Sustained cortisol elevation, hypertension, metabolic dysregulation, inflammatory activation	Substance use, unhealthy lifestyle habits	Accelerated atherosclerosis, hypertension, adverse cardiac events
Type A Personality	Hostility, competitiveness, time urgency	Increased sympathetic activity, endothelial dysfunction	Anger expression, stress reactivity	Elevated coronary artery disease risk
Type D Personality	Negative affectivity, social inhibition	Chronic stress response activation, inflammatory processes	Reduced help-seeking, social withdrawal	Poor prognosis, increased mortality and morbidity
Low Social Support / Loneliness	Social isolation, perceived lack of support	Increased inflammatory markers, neuroendocrine dysregulation	Poor adherence, reduced engagement in care	Higher morbidity, mortality, reduced quality of life

Psychological Determinant	Key Characteristics	Biological Mechanisms	Behavioral Pathways	Cardiovascular Impact
Maladaptive Coping	Denial, avoidance, substance misuse	Sustained stress response, autonomic imbalance	Non-adherence, delayed care seeking	Worsened disease progression
Resilience & Adaptive Coping (Protective)	Optimism, problem-solving, emotional regulation	Reduced stress reactivity, improved autonomic balance	Better adherence, healthy behaviors	Improved recovery, reduced adverse outcomes

5. Assessment Tools for CVD-Related Distress

To measure cardiovascular disease (CVD)-related distress, a multidimensional method encompassing subjective, clinical, and biological variables needs to be applied to the populations involving the cardiac population. The self-report questionnaires are the most prevalent tools because they are feasible, cost-effective, and they are easy to administer in both inpatient and outpatient conditions(17). These tools can allow patients to describe depressive, anxiety, and illness-related issues, which allows identifying them at an early age and performing regular screenings as shown in **Table 2**. Nevertheless, questionnaires are efficient, but they could be affected by the bias in responses and fail to differentiate between transient distress and a significant psychiatric disorder. Clinical interview-based measurements, which involve some form of administrations by trained professionals, are more diagnostic in nature in as much as they discuss the length of symptoms, functional incapacity, comorbidity and contextual stress(18). They are necessary to identify complex psychosocial problems or initial screening results are positive, and hence such interviews are of particular value. Disease-specific distress scales in addition to general psychological measures are specifically cardiac-related fears, symptom vigilance, treatment burden and perceived loss of control, provide a delicate understanding of illness adjustment unrelated to more traditional scales of depression or anxiety. These are specifically sensitive tools to cardiac-specific issues and can be effectively applied to rehabilitation and longitudinal monitoring(19).

Table 2: Validated Instruments for Assessing CVD-Related Distress **Table 2:** Validated Instruments for Assessing CVD-Related Distress

Instrument Name	Type	Primary Focus	No. of Items	Clinical Utility in Cardiac Patients	Strengths	Limitations
Patient Health Questionnaire (PHQ-9)	Self-report	Depression severity	9	Widely used screening tool in cardiac clinics	Brief, validated, easy scoring	May overlap with somatic cardiac symptoms
Hospital Anxiety and Depression Scale (HADS)	Self-report	Anxiety & Depression (non-somatic focus)	14	Suitable for medically ill patients	Minimizes somatic symptom bias	Less diagnostic specificity
Generalized Anxiety Disorder Scale (GAD-7)	Self-report	Anxiety symptoms	7	Quick anxiety screening in cardiac rehab	Short, validated, easy interpretation	Limited illness-specific focus
Cardiac Anxiety Questionnaire (CAQ)	Disease-specific scale	Fear of cardiac-related sensations	18	Measures heart-focused anxiety	Cardiac-specific sensitivity	Less useful for general depression
Perceived Stress Scale (PSS)	Self-report	Perceived stress	10 / 14	Assesses stress burden in CVD	Broad stress evaluation	Not disease-specific
Structured Clinical Interview (SCID)	Clinical interview	DSM-based psychiatric diagnosis	Variable	Diagnostic clarification	High validity	Time-intensive, requires training

Instrument Name	Type	Primary Focus	No. of Items	Clinical Utility in Cardiac Patients	Strengths	Limitations
SF-36 Health Survey	QoL instrument	Physical & mental health domains	36	Evaluates overall quality of life	Comprehensive, widely validated	Not distress-specific
Heart Rate Variability (HRV)	Biomarker	Autonomic function	N/A	Objective stress indicator	Physiological measurement	Requires equipment & interpretation
Serum Cortisol / CRP	Biomarker	Neuroendocrine & inflammatory response	N/A	Biological stress marker	Objective evidence	Influenced by multiple confounders

Quality of life (QoL) measures also expand the scope of assessment by considering the physical, emotional and social effects of CVD, and lower quality of life is always associated with negative prognosis. In addition to the subjective measures, biomarkers of psychological stress such as cortisol levels, inflammatory markers and heart rate variability are objective indicators of neuroendocrine and autonomic dysregulation in relation to distress. Although psychosocial assessment cannot be substituted with biomarkers, they enhance the knowledge of the biological communication routes of how the emotional variables determine cardiac prognosis(20). Moreover, both validated depression and anxiety scales have different scopes, are more sensitive and have different clinical uses as compared in **Table 3**, which supports the significance of the choice of the instruments depending on the aim of the assessment. All these tools together contribute to a holistic approach toward the detection, tracking, and treatment of psychological distress in cardiovascular care(21).

Table 3: Comparison of Depression and Anxiety Scales Used in Cardiac Patients

Scale	Measures	Somatic Item Inclusion	Cut-off Scoring	Strengths in Cardiac Populations	Limitations
PHQ-9	Depression	Yes (fatigue, sleep, appetite)	≥10 moderate depression	Widely validated; easy to use	Somatic overlap with CVD symptoms
HADS-D	Depression	Minimal somatic content	≥8 probable case	Designed for medical patients	Less comprehensive for severe depression
Beck Depression Inventory-II (BDI-II)	Depression	Includes somatic items	≥14 mild depression	Sensitive severity grading	Somatic bias possible
GAD-7	Anxiety	Some somatic symptoms	≥10 moderate anxiety	Brief and validated	Not cardiac-specific
HADS-A	Anxiety	Minimal somatic content	≥8 probable case	Reduces physical symptom confounding	Less detailed anxiety profiling
Cardiac Anxiety Questionnaire (CAQ)	Heart-focused anxiety	Cardiac-specific focus	Subscale scoring	Highly sensitive to cardiac fear	Limited general anxiety coverage
State-Trait Anxiety Inventory (STAI)	State & trait anxiety	Includes physiological items	Variable by population	Differentiates acute vs chronic anxiety	Lengthy and less specific to CVD

6. Pathophysiological Mechanisms Linking Psychological Distress and CVD

The pathogenesis of cardiovascular disease (CVD) is affected by the complex interplay between neuroendocrine, autonomic, inflammatory, and behavioral interactions which all contribute to cardiovascular risk and are mediated by psychological distress. One of the central mechanisms is the activation of the hypothalamic-pituitary-adrenal (HPA) axis because chronic stress triggers prolonged cortisol secretion, which is a contributive factor to hypertension, insulin resistance, endothelial dysfunction and accelerated atherosclerosis(22). At the same time, distress leads to autonomic imbalance by increasing the activity of the sympathetic nervous system and decreasing the tone of parasympathetic system, which leads to an increased heart rate, increased blood pressure variability, decreased heart rate variability, and increased vulnerability to arrhythmias and ischemic events. These body changes are directly associated with the process of inflammatory activation, as psychological stress causes an increase in the levels of pro-inflammatory cytokines and C-reactive proteins, in turn, stimulating the formation of plaques, vascular damage, and the instability of the plaque(23). These biological mechanisms are not isolated but dynamically interact with behavioral pathways that make the cardiovascular outcomes even worse as seen in **Figure 4** and **Table 4**. Patients with depression, anxiety, and chronic stress tend to have poorer medication compliance, less cardiac rehabilitation, poor dietary practices, physical inactivity, and tobacco use that increases metabolic and vascular dysfunction. Furthermore, maladaptive coping behaviors can postpone the healthcare-seeking process and negatively affect the maintenance of the disease in the long term. The biological dysregulation and negative health behaviour interrelations are self-perpetuating, whereby the cardiovascular pathology is enhanced due to psychological distress and vice versa(24). **Table 4** provides evidence of this multifactorial/bidirectional character of distress-CVD relationship by integrating evidence in the neuroendocrine, autonomic, immune, and behavioral domains. The acknowledgment of these interrelated processes highlights the importance of considering psychosocial assessment, stress management interventions, and behavioral change techniques as part of the end-to-end approach to cardiovascular care improvement of prognosis, occurrence of repeated events, and overall patient well-being(25).

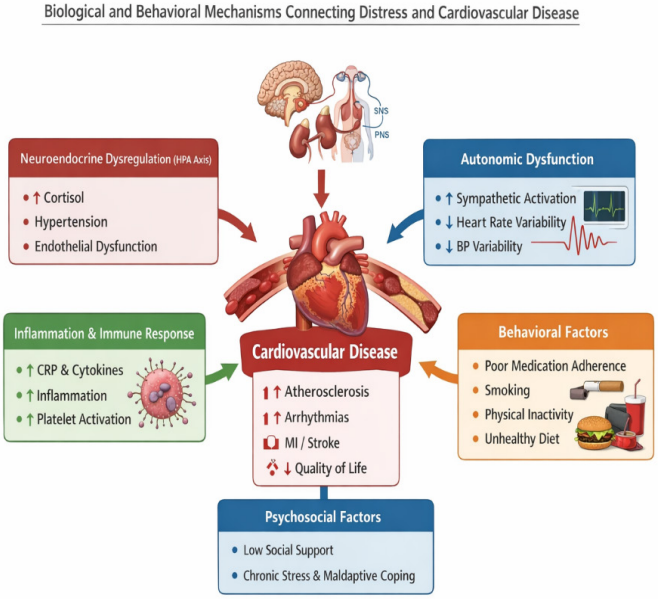

Figure 4: Biological and Behavioral Mechanisms Connecting Distress and Cardiovascular Disease

Table 4: Summary of Proposed Mechanisms and Supporting Evidence

Mechanism Category	Specific Pathway	Physiological Effects	Cardiovascular Consequences	Supporting Evidence Type
Neuroendocrine (HPA Axis)	Chronic cortisol elevation	Endothelial dysfunction, insulin resistance, hypertension	Accelerated atherosclerosis, increased cardiac events	Longitudinal cohort studies, biomarker research

Mechanism Category	Specific Pathway	Physiological Effects	Cardiovascular Consequences	Supporting Evidence Type
Autonomic Nervous System Dysfunction	Increased sympathetic activity, reduced parasympathetic tone	Elevated heart rate, reduced HRV, BP variability	Arrhythmias, ischemia, sudden cardiac death	Clinical cardiac monitoring studies
Inflammation & Immune Activation	Elevated CRP, IL-6, TNF-α	Plaque formation, vascular injury, plaque instability	Acute coronary syndromes, stroke	Inflammatory biomarker studies
Platelet Activation	Stress-induced platelet aggregation	Increased thrombosis risk	Myocardial infarction, thromboembolic events	Hematologic and laboratory studies
Behavioral Pathways	Poor medication adherence, smoking, inactivity	Metabolic dysregulation, obesity, uncontrolled BP	Disease progression, recurrent hospitalization	Behavioral and rehabilitation research
Psychosocial Modifiers	Low social support, maladaptive coping	Sustained stress activation	Poor prognosis, reduced survival	Observational psychosocial studies

7. Clinical Implications

There is a need to conduct systematic screening and integrated care models, specific interventions and multidisciplinary teamwork in relation to clinical implications of the interplay between psychological distress and cardiovascular disease (CVD). Depression, anxiety and distress linked to illness screening should become a regular part of cardiovascular care, especially after acute events like myocardial infarction and during cardiac rehabilitation(26). Short, confirmed instruments can help identify potential at-risk people at the earliest stage, yet the screening should be supported by the establishment of clear referral routes and follow-up mechanisms to guarantee the relevant treatment. The concept of integrated cardiac -psychological care reflects an integrative model of medical care with systematic psychosocial evaluation and medical care. Integrating mental health into the cardiology environment will optimize the early diagnosis, the quality of adherence to medical medication and lifestyle change, and the rate of rehospitalization(27). The best avenue where such integrated services can be offered is through cardiac rehabilitation programs that will facilitate physical healing as well as emotional adaptation. The use of evidence-based interventions such as cognitive-behavioral therapy (CBT), stress management methods, and mindfulness-based interventions has proven to be effective and helpful in minimizing symptoms of depression and anxiety and promotes healthier coping skills. Pharmacotherapy, including selective serotonin reuptake inhibitors, under strict monitoring, can be used to enhance the results in cases of moderate psychiatric symptoms and severe ones. One-on-one, interdisciplinary approach to treatment can result in the greatest long-term returns. Multidisciplinary teams play the key role in the successful implementation of such clinical strategies(28). The partnership between cardiologists, primary care, nurses, psychologists, psychiatrists, rehabilitation experts, dietitians and social workers will lead to holistic evaluation and coordinated treatment. Early signs of distress are often detected by nurses and rehabilitation professionals, and the diagnostic clarification and therapeutic intervention are implemented by mental health specialists. Social workers deal with any socioeconomic obstacles that can slow down treatment compliance. Multidisciplinary teams improve patient-centered care and can help to overcome the biological, psychological, and social determinants that affect the progress of CVD by promoting communication and shared decision-making. Taken together, these clinical approaches underscore the significance of incorporating psychosocial management in daily cardiovascular care to enhance long-term survival, limit recurrent incidents and improve the quality of life(29).

8. Gaps in Literature and Future Research Directions

Even with the increased awareness of the correlation between cardiovascular disease (CVD) and psychological distress, there are still substantial gaps in literature. To begin with, there are still conceptual inconsistencies concerning the definition and measurement of CVD-related distress, where most studies concentrate mostly on depression and anxiety, but ignore illness-specific emotional experiences(27). The cardiac-specific assessment tools should be standardized and validated in more and more populations and cultures. Second, a significant part of the available evidence is based on cross-sectional or observational research, which restricts the causal generalization of the directionality of relations between psychological determinants and cardiovascular outcome. Longitudinal and mechanistic analyses are necessary to elucidate the relationships across time and the basic biological processes. Third, studies primarily represent the high-income nations and there is a lack of data within the low- and middle-income regions in which CVD burden is growing at an alarming rate(30). Also, intervention studies may differ in terms of the methodology, time, and the outcome measures, and are quite difficult to compare. The next steps of research should be focused on large-scale randomized controlled trials that compare interventions of integrated psychosocial and cardiac care, and interventions that are specific to patient factors (age, gender, comorbidities, etc). Inclusion of biomarkers, digital health technologies, and culturally sensitive methods could contribute to the further knowledge. By filling these gaps, evidence-based practice will be reinforced and more effective and globally applicable strategies implemented to deal with psychological distresses among cardiovascular populations(31).

9. Conclusion

Having been one of the most frequent causes of death and disability globally, it is evidenced that cardiovascular disease (CVD) is marked by a considerable role of psychological distress in its occurrence, progression, and clinical outcomes. Depression, anxiety, chronic stress, maladaptive personality traits, social isolation, and poor coping mechanisms are not only causes of emotional distress but lack of interest in poor cardiovascular outcome. These psychological determinants affect cardiovascular health in a complicated biological process, and they are hypothalamic-pituitary-adrenal axis, autonomic nervous system imbalance, systemic inflammation, platelet activation. Moreover, distress has adverse impact on behavioral variables like drug compliance, physical exercise, diet, cessation of smoking and cardiac rehabilitation. Biological dysregulation and maladaptive behaviors interact in a loop that increases the psychological and cardiovascular health. CVD-related distress must be evaluated using a multidimensional methodology that involves validated screening measures, structured clinical interviews, disease-specific measures, quality-of-life measures and, in suitable cases, stress biomarkers. Routine psychosocial screening in clinical practice and the multidisciplinary and collaborative models with cardiology services should be prioritized as a way of integrating mental health care in the practice of cardiology. Cognitive-behavioral therapy, stress management strategies, resilience training, and pharmacotherapy closely followed by evidence-based interventions could be used with evidence-based studies to enhance emotional outcomes and possibly cardiovascular prognosis. Though, there have been remarkable progress in the relationship between psychological variables and heart disease, additional longitudinal and interventional studies are required to develop treatment plans and overcome the global disparities. Finally, the holistic, patient-centered, approach encompassing psychological as well as cardiovascular care would be necessary in order to improve the survival, decrease the recurrent events and improve the overall quality of life of people living with CVD.

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