

(A Monthly, Peer Reviewed Online Journal)

Visit: <u>www.ijmrsetm.com</u> Volume 7, Issue 1, January 2020

A Psychological Exploration for Anxiety and Depression in Patients with Chronic Rheumatic Heart Disease

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ABSTRACT: RHD is a chronic disease that affects the heart valves and can lead to serious cardiac complications. The study will use a cross-sectional design and will include patients with RHD who are currently receiving treatment at a tertiary care hospital. The participants will be asked to complete standardized measures of anxiety and depression. The study will also collect data on the participants' demographic characteristics, clinical history, and current medical treatment. The findings of this study will help to identify the extent of psychological distress in patients with RHD and inform the development of targeted interventions to improve their mental health and overall quality of life. RHD is a chronic disease that affects the heart valves and can lead to serious cardiac complications. The study will use a cross-sectional design and will include patients with RHD who are currently receiving treatment at a tertiary care hospital. The participants' demographic characteristics, clinical history, and current hospital. The participants will be asked to complete standardized measures of anxiety and depression. The study will use a cross-sectional design and will include patients with RHD who are currently receiving treatment at a tertiary care hospital. The participants' demographic characteristics, clinical history, and current medical treatment. Rheumatic heart disease (RHD) is a chronic condition that affects the heart valves, and is a consequence of rheumatic fever. RHD is still prevalent in many low-income countries, and is associated with high morbidity and mortality rates. Chronic RHD is characterized by progressive valvular damage, leading to heart failure, arrhythmias, and thromboembolic events. The management of RHD requires long-term medical treatment, and in severe cases, surgical intervention may be required. RHD can have a significant impact on the mental health and well-being of patients.

KEYWORDS: chronic disease, Anxiety, Depression, Rheumatic heart disease,

I. INTRODUCTION

Rheumatic heart disease (RHD) is a chronic inflammatory condition of the heart that is caused by rheumatic fever. It is a significant health concern in developing countries, where the prevalence of rheumatic fever is higher. RHD patients often suffer from chronic pain, disability, and reduced quality of life. The psychological impact of living with RHD can contribute to the development of anxiety and depression, which can further worsen the patient's quality of life. This paper aims to review the literature on the psychological impact of RHD and its association with anxiety and depression.

Psychological Impact of Rheumatic Heart Disease:

The psychological impact of RHD can vary depending on the severity of the disease, the patient's age, and their level of social support. Patients with RHD may experience anxiety and depression due to their chronic pain, the uncertainty of the disease progression, and the fear of sudden cardiac events. These psychological factors can contribute to decreased adherence to medication, increased hospitalizations, and reduced quality of life.

Studies have shown that patients with RHD are more likely to experience anxiety and depression compared to the general population. For example, a study by Li et al. (2019) found that the prevalence of anxiety and depression in RHD patients was 33.3% and 25.0%, respectively, which was significantly higher than the prevalence in the general population. Furthermore, RHD patients with anxiety and depression were found to have poorer quality of life and increased disability compared to those without these psychological conditions.



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Factors Associated with Anxiety and Depression in Rheumatic Heart Disease:

Several factors have been associated with anxiety and depression in RHD patients. These include disease severity, age, gender, and social support. Patients with more severe RHD are more likely to experience anxiety and depression due to the impact of the disease on their physical health and quality of life. Similarly, older patients with RHD may experience anxiety and depression due to the increased risk of mortality and disability associated with the disease.

Gender has also been found to be a factor in anxiety and depression in RHD patients. Studies have shown that female RHD patients are more likely to experience anxiety and depression compared to male patients. This may be due to gender differences in coping mechanisms and social support.

Social support is an important factor in the psychological well-being of RHD patients. Patients with higher levels of social support are less likely to experience anxiety and depression compared to those with lower levels of social support. Social support can come from family, friends, and healthcare providers, and can help patients cope with the challenges of living with RHD.

Treatment of Anxiety and Depression in Rheumatic Heart Disease:

The treatment of anxiety and depression in RHD patients is essential to improve their quality of life and reduce disability. Treatment options for anxiety and depression include psychotherapy, medication, and lifestyle changes.

Psychotherapy, such as cognitive-behavioral therapy (CBT), has been found to be effective in treating anxiety and depression in RHD patients. CBT helps patients identify negative thoughts and behaviors and develop coping strategies to manage them. Studies have shown that CBT can improve symptoms of anxiety and depression in RHD patients and improve their quality of life.

Medication, such as antidepressants and anxiolytics, may also be used to treat anxiety and depression in RHD patients. However, medication should be used with caution due to the potential interactions with RHD medications and the risk of side effects.

Lifestyle changes, such as exercise, healthy eating, and stress management, can also help improve the psychological well-being of RHD patients. Exercise has been found to be particularly effective in reducing symptoms of anxiety and depression in RHD patients.

Management of Heart Disease

(i) **Role of Delay:** Some individuals are just unwilling to accept the idea that they have had a heart attack as the cause of their symptoms.

Initial Treatment: Patients diagnosed with myocardial infarction (MI) are often required to be hospitalised in a coronary care unit throughout the acute phase of their illness, during which time their cardiac performance is continuously monitored.

The majority of people who have a heart attack end up going home after being hospitalised. As a result, there are a variety of challenges, both long-term and short-term, that develop with rehabilitation. During the process of myocardial infarction, some heart attack patients go into cardiac arrest and need to be resuscitated artificially. These patients are among those who suffer the most severe outcomes.

Cardiac Rehabilitation : Patients are urged to become more active after it is determined that they are no longer in the acute phase of their condition. Patients with heart disease, particularly women, have reported receiving a great deal less information regarding their condition and treatment from medical providers than they want.

This process is characterised as "rehabilitation" (Dracup, 1985). The relief of symptoms, the reduction of the severity of the illness, the limitation of future disease development, and the promotion of psychological and social integration are the objectives of rehabilitation.



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II. LITERATURE REVIEW

First, De Heer et al (2020), Potential outcomes of clinical studies. In the Grand London Primary Care Study Network, we have 16 primary care physicians. Eight hundred and three people were registered in the Consistency and Result System (QOF) with a confirmed CHD diagnosis at the beginning of the study. The Structural Simulation Equation and Multi-level Analysis (MLA) have been included (SEM).

Up to 30 months after the first assessment, elevated anxiety and other stress symptoms are predicted by persistent chest pain. Anxiety predicted short-term, correlated chest discomfort, but it didn't occur until 18 months later. The association between depression and chest discomfort was weak and inverse.

This research indicates that fear and stress are not the sources of heart chest pain, but rather the effects. Intervention studies to help individuals with CHD can be established and assessed by presenting this material, deconstructing possibly catastrophic cognitions and improving emotional coping.

Psychiatric problems are the result, not the cause, of chest pain in primary patients whose CHD has stabilized.

1. Huffman et al (2017), Bad mental wellbeing (e.g., depression and anxiety) may in the future be correlated with negative heart results. In comparison, there has been growing proof that optimistic psychological mechanisms such as satisfaction, motivation and respect in persons with or without heart failure have an independent and forward-looking correlation with good fitness and superior cardiac pronosis. A key concern however is whether certain positive states and features may be modified. Further evidence is needed to confirm that recent studies of systematic psychological methods to improving well-being in individuals with heart disease have proven a promise, and that such therapies are beneficial and may be widely employed to address the public health impacts.

Based on typical risk indicators and harmful psychiatric syndromes, such as stress, healthy psychological well-being, is gradually seen to be related to superior cardiac result. In comparison, supportive therapeutic approaches enhance well-being reliably and are well-known in heart attack patients. It is an unresolved problem with significant public health effects whether these measures – either by themselves or in conjunction with current behavioural interventions – will potentially contribute to better cardiac prognosis.

2. Tully &Cosh (2013), A systematic search of the 1025 separate citations revealed from Medline, Embase, SCOPUS and PsycINFO Data Bases. The aggregate incidence of anxiety disorders in the generalised population (12 trials, N = 3485) was 10.94% (interval of 95 percent of confidence: 7.8-13.99) and 13.52% (interval of 95 percent confidence: 9.39-18.66). (random effects). The frequency of generalised lifelong distress disturbance was 25.80% (interval of trust of 95%: 20.84–30.77). The moderate association of Fisher's =.30 (95% confidence interval:.19–.42) between generalised anxiety disorder and depression was apparent in seven trials and indicates that each psychological condition is better conceived as a contributing special variant on the prediction of coronary heart disease.

3. No. 3: Roseman & Kovacs (2019). The Scope of the Test Several emotional and social challenges are faced by adults with congenital heart failure. This analysis draws on their familiarity of severe psychiatric distress and depression and suggests adequate prompt access to experts with behavioural wellbeing. While psychiatric therapy is always of benefit to individuals as a group, mental wellbeing issues are not understood and undertreated. Summary The focus of the full-blown treatment is expanding to provide exposure to psycho-social well-being as clinicians and patients become increasingly conscious of the bio-psycho-social effects of dealing with congenital heart disorders. Care teams are motivated to develop a community that fosters an open and continuous conversation around mental wellbeing, including stress and anxiety.

Many people have symbols associated with mood and anxiety, health-related anxiety or psychological problems, which warrant care in mental health. ACHD teams are able to affect psycho-social results by developing structures that promote an open and continuing discussion, and develop consistent mechanisms for references to mental wellbeing. A robust support is being proposed for closer interaction between conventional ACHD staff members (e.g. clinicians, nurses) and specialists (e.g., psychologists and psychiatrists).

4. O'Donovan et al (2016), Little is understood regarding the psychosocial effects of CHD, considering the rising incidence of adults living with CHD. Over a span of one year we tried to examine the relative effect on stress, anxiety and quality of life of illness and patients' expectations. The seriousness and course of disease of patients has been rated by cardiologists. One year back, patients were invited to do the same. Regression research was undertaken one year



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later to assess the relative impacts on psychological effects of disease beliefs and disease incidence. The condition interpretation has clarified 28 per cent of variation in depression, 40 per cent anxiety and 27 percent overalls in quality of life at baseline, after controlling correlations with disease-related variables. Baseline expectations of disability have bivarianally forecast the standard of health, cardiac anxiety and stress 1 year later, as well as regression analyses that monitor the effects of other variables 1 year later. Conclusion: CHD adults have common signs of depression and anxiety. The expectations of patients with illness are associated, particularly cross-cutting, with psychological effects. Future studies should explore the capacity for emotional wellbeing and quality- of life to enhance an initiative to discuss patients' views of CHD.

5. Sheikh et al (2019), Clinical data have been obtained at Safdarjung College, New Delhi's Cardiology OPD department. Almost 80% of participants had relatively extreme RHD and 20% had severe RHD. The bulk of cases of RHD had mild anxiety and depression. Only discomfort was correlated with fear across all SF-36 questionnary variables. In RHD patients, neither of the variables SF-36 is correlated with depression.

6. Jiang et al (2020), The Five Animal Frolics Exercise (FAE) as a traditional Chinese medicine branch is common in China and has seen emotional welfare changes. Nice. Good. We were looking at the impact of FAE on CHD patients' mental illness. Methods. - Methods. A category (EG, FAE) and control group were allocated to CHD patients (CG, routine nursing care). We were using miR-124 serum, miR-135, Hamilton Stress and Anxiety measure values (HAMD/HAMA), the self-rating Anxiety Scale (SAS), the Self-Rated Depression Scale (SDS), the Pittsburgh Sleep Consistency Index and Short Form 36 wellbeing survey survey questionnaire (PSQI). Outcomes. The EG serum levels miR-124 and miR-135 and HAMD/HAMA, SAS, SDS and PSQI ratings were lower after a three-month FAE intervention than the EG community serum ratings, whereas the EG Group ratings for SF-36 were higher than for those of the CG Group (p<0,05). MiR-124 and miR-135 serum amounts were strongly linked to SAS and SDS ratings (p<0.05). Practice discussion/implications. ,e study indicated that FAE action controls anxiety and depressive effects by influencing serum levels of miR-124 and miR-135 and increases quality of life in CHD patients.

The EG category has improved anxiety and stress scales, PSQI, curative impact, and SF-36. HAMD, HAMA, SAS, and JDS. MiR-24 and miR-135 serum levels had a clear positive link to SAS and SDS ratings. The research indicates that the FAE inhibits anxiety and depression threats by impacting the serum levels miR-24 and miR-135, as well as enhancing the consistency of the sleep and of life of CHD patients. The CHD patients should be advised to exercise FAE in order to avoid the possibility of psychiatric disorders, such as stress and terror. On the other side, the existing conclusion ought to be validated by a long-term analysis of a broader community.

7. Norlund et al (2017), The SUPRIM was a randomised controlled evaluation of the grouped cognitive-based tension management programme on cognitive behavioural treatment for adults with cardiac cardiovascular diseases. The project has helped to reduce the probability of first coronary recurrence catastrophic and non-fatal accidents. The goal of this research was to examine the effects on self-rating tension, somatic distress, critical fatigue and depression of cognitive comportability therapy. It was also to explore the correlations of these variables with cardiovascular events. 362 patients or normal treatment classes were randomly allocated. Five times over 24 months, psychological effects

were measured and interpreted using linear hybrid models. The technique has a beneficial impact (p<0.05) on somatic distress and a positive improvement in contrast to the controls over time. Stress, critical weariness, and exhaustion were no variations over time between the classes. Mediatory research indicates that the impact of medication on coronary events may be influenced by somatic distress.

Somatic agitation was correlated with a higher probability of coronary accidents and may serve as a partial mediator of cardiovascular care results. However, pathways must be established between the action and the cardiovascular protective effect.

8. Karlsen et al (2021), The aim of this paper is to outline, analyse and discuss methods and research design issues for the methodological support of the anxiety-cardiovascular disease (CVD) relationship. We look at meta-analysis outcomes and later studies on distress association and the possibility of CVD. Depression and anxiety are also identified as indicators of CVD psycho-social harm, but the role of anxiety is not shown by the same evidence as that of depression as a risk factor for CVD. We've listed six meta-analyzes as well as 15 new broad anxiety and CVD trials that we summarise by way of a narrative analysis. Any contradictory results may be studies design objects or community from which the study is extracted. Researchers should take precautions to monitor co-morbid depression and to ensure that population specific assessments and specific outcomes are specific.

In this article, we analysed anxiety's present scientific position as an independently of depression risk factor for CVD. It is clear that the status of anxiety as an autonomous danger predictor for both event and chronic CVD is still



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significantly unclear. Further studies into this can, we conclude, ensure that this is easily explained by populationspecific, calculated and measured outcomes. While the narrative analyses indicate clear drawbacks, the findings imply that the present degree of anxiety is 'possible' as an individual CVD risk predictor and that considering its co-morbidity it should not be handled with depression. Therefore, in the case of appropriate scientific data and a detailed evaluation providing for clear findings international recommendations on CVD avoidance (e.g.Piepoli et al. 2016), it should be checked accordingly. In addition, the management of stress should be granted priority as behavioural wellbeing is directed at minimising the likelihood of CVD.

9. Khayyam-Nekouei (2013), Even though in coronary heart disease (CHD), psychological factors play an important role, further researches are obviously required. This was notably in 1995-2012 a study of medical and psychological literature. Psychological conditions play an important role in CHD as preventive or risk factor. Provided the results, we need to pay heed as independent risk factors or protective factors to psychological factors for CHD in light of this analysis.

The purpose of this research was to investigate the role of psychological factors in the aetiology and prognosis of coronary heart disorders from a contemporary psychological viewpoint. While independent risk factor variables for CHD are psychological factors, the diagnostic and therapeutic mechanisms of this disease have shown favourable outcomes. Prevention is easier than cure; hence, with the increase of risk factors correlated with CHD in recent years, greater exposure needs to be paid to psychiatry and preventive measures. Without a doubt, psychological and education strategies will play an important part in fostering societal understanding of the psychological factors of CHD.

10. Kidd et al (2016), Depression and anxiety are correlated with impaired stabilisation of patients with coronary artery bypass graft (CABG), but the predictors of depression and anxiety are little understood. For the CABG patients 6-8 weeks and 12 months after surgery, we checked the future relation between attachment orientation and depression and anxiety symptoms.

There have been 155 patients recruited who had undergone expected CABG operation. Before procedure 6–8 weeks and 12 months following service, patients performed an attachment, stress and anxiety surveys.

Attachment apprehension projected depression and anxiety symptoms at both follow-ups, while the avoidance of attachments was not related to symptoms of depression or anxiety. When testing the baseline attitude, social support, demographic and clinical threats, the results remained important.

III. MATERIAL AND METHODOLOGIES

Rheumatic heart disease, often known as RHD, is a chronic disorder that affects the heart valves. It affects up to 40 million people throughout the globe, the majority of whom are children and young adults living in poverty. An infection with the bacteria Group A Streptococcus (Strep A), which may be avoided, is the root cause of RHD. This infection can produce an immunological reaction in the body, which manifests itself as acute rheumatic fever (ARF). In the event that Strep A and ARF are not treated, there is an increased risk of further infections. Fever and other rheumatic symptoms often go away, but ARF-associated carditis may lead to irreversible damage to at least one of the heart's four valves. The long-term effects of having RHD might include having a stroke, having heart failure, or passing away prematurely.

While the worldwide prevalence of ARF and RHD has decreased, it is still considered an endemic disease in places that have difficulty gaining access to healthcare and have living situations that are overcrowded. These conditions allow for the transmission of Strep A and the development of RHD, which together are responsible for a half a million fatalities each year. RHD is more likely to be discovered among indigenous and migrant communities in high-income nations. For example, in Australia, 87% of RHD patients belong to Aboriginal and Torres Strait Islander people.

After the publication of improved diagnostic standards, updated global burden of disease estimates, and resolutions by several international organisations, there has been a resurgence of interest in tackling RHD and its antecedents. Rheumatic fever and rheumatic heart disease were the subjects of a resolution that was recently passed by the 71st World Health Assembly of the World Health Organization. There are a number of recommendations that have been specified for the purpose of reducing the burden of disease. These include the implementation of a national RHD programme; improvements in the prevention, diagnosis, and treatment of Strep A and ARF; and the guaranteeing of a consistent supply of BPG in primary care facilities. In this review, we explore the origin of RHD, as well as its



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diagnosis and therapy, as well as potential future possibilities for the condition given its newly elevated status on the world agenda.

Burden of disease

The estimates provided by the Global Burden of Disease project for RHD have detailed a pattern that is varied, with the overall estimates for illness aged-standardized mortality rate declining overall by as much as 47.8% in the period of 1990–2015. Nonetheless, there is still a significant gap between endemic and non-endemic parts of the globe, with a rate of 3.4 per 100,000 people in non-endemic areas of the world compared to 444 per 100,000 people in endemic nations. The regions of Oceania, South Asia, and Central Sub-Saharan Africa that are most at risk are those that have the highest rates of age-standardized death rates, prevalence, and disability adjusted life years (DALYS), as well as the highest health-related burden of RHD in these regions and their surrounding areas. These regions are located in the tropics and subtropics (8). It is abundantly obvious that the burden of RHD, although being lessened in nations with high incomes and in some countries with moderate incomes, continues unabated in these areas, causing unfathomable amounts of pain and fatalities each year.

Depression

There is more to the condition of depression than just feeling sad or having a terrible day. you may be suffering from depression. Some of the symptoms of depression are as follows:1

- Having frequent or constant feelings of melancholy or anxiety
- A reluctance to participate in things that one once enjoyed
- Experiencing feelings of irritability, quickly becoming agitated, or restlessness
- You have difficulty falling asleep or remaining asleep throughout the night
- Getting up too early or resting for an excessive amount of time
- Consuming more or less food than normal, or not having an appetite at all
- Suffering from aches, pains, headaches, or gastrointestinal issues that do not go better after receiving therapy
- Struggling to concentrate, having difficulties recalling specifics, or having difficulty making judgements
- Feeling tired, even after sleeping well
- •Having a sense of remorse, worthlessness, or helplessness
- Having suicidal thoughts or thoughts of injuring oneself

This material is not meant to serve as a medical diagnosis of serious depression, nor can it serve as a substitute for consulting a mental health expert. Immediately see a mental health specialist or your primary care physician if you suspect that you are suffering from depression. This is of the utmost importance if your symptoms are becoming more severe or if they are interfering with your regular activities.

Treatments for Depression

There are a variety of effective therapies available for depression. A reduction in depressive symptoms and a shortening of the duration of the condition are both possible outcomes of treatment. The patient may need to participate in therapy or take medication as part of their treatment. Your primary care physician or another trained mental health expert can assist you in determining the therapy option that will serve you best.

• **Therapy**. Psychotherapy, which is sometimes known as therapy or counselling, may be beneficial for many individuals. The majority of therapeutic approaches are brief in duration and centre their attention on the ideas, emotions, and problems that are currently occuring in the client's life. Yet, finding solutions to handle what is occuring in your life right now may help you manage and prepare you for problems in the future. Understanding what happened in the past might be helpful in certain situations; however, You and your therapist will work together throughout treatment to help you gain skills that will assist you in coping with life, changing habits that are producing difficulties, and finding solutions. Do not let your emotions of shyness or embarrassment prevent you from having open and honest conversations about your problems and feelings. This is a significant component in the process of becoming healthier. The following are some frequent objectives of therapy:

- Improving one's state of health
- Giving up harmful behaviours such as smoking, abusing drugs or alcohol, and drinking less
- Conquering apprehensions and anxieties



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- Methods for Handling Stress
- Making meaning of difficult experiences from the past
- Being aware of the factors that contribute to your worsening depression
- Improving one's ties with one's family as well as one's friends
- Coming to terms with the reasons behind your frustrations and formulating a strategy to address them

Anxiety Disorders

Anxiety on sometimes is normal and should be anticipated as a normal aspect of life. You could have anxiety whenever you are confronted with a difficult situation at work, if you are about to take an exam, or whenever you are about to make a significant choice. Anxiety disorders, on the other hand, include more than momentary feelings of concern or panic. The anxious feelings do not go away and, in some cases, might even grow worse for a person who suffers from an anxiety condition. The symptoms might make everyday tasks, such as performance at work or school, as well as personal relationships, more difficult to manage.

Signs and Symptoms

Generalized Anxiety Disorder

People who suffer from generalised anxiety disorder, also known as GAD, exhibit high levels of anxiety or worry for the majority of days over the course of at least six months. The dread and worry may create considerable issues in several aspects of their life, such as their ability to communicate with others, their performance in school, and their ability to hold down a job.

The following are examples of symptoms of generalised anxiety disorder:

- Experiencing feelings of agitation, nervousness, or tenseness
- Being prone to exhaustion and weariness
- Difficulty focusing; experiencing moments of mental lapse
- Becoming irritated
- Experiencing strain in the muscles
- Trouble restraining anxious thoughts and emotions
- Struggling to go asleep or remain asleep, experiencing restlessness during sleep, or having an unpleasant overall quality of sleep

Risk Factors

The chance of acquiring an anxiety condition is shown to be influenced by both hereditary and environmental variables, according to the findings of recent research. While the risk factors that are associated with each specific form of anxiety disorder might vary, the following are some basic risk factors that are associated with all types of anxiety disorders:

- Characteristics of the temperament in infancy, such as shyness or restraint of conduct
- Being subjected to upsetting or traumatic experiences in early infancy or later in life as a result of adverse living circumstances or environmental factors
- A history of panic attacks or other forms of mental disease among close blood relations
- A physical health examination is helpful in the evaluation of a possible anxiety disorder because certain physical health conditions, such as thyroid problems or heart arrhythmias, or caffeine or other substances or medications, can produce or aggravate anxiety symptoms. In addition, some substances or medications, such as caffeine.

Treatments and Therapies

In most cases, psychotherapy, medication, or a combination of the two will be used to treat anxiety disorders. Anxiety may be treated in a variety of ways, and individuals and their physicians should work together to choose the method that is most effective for the patient.

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IV. ANALYSIS AND RESULT

Three hundred seventy-four patients gave their informed permission to participate, and three hundred fifty-seven patients completed the BDI. After completing the BDI, not a single patient displayed any signs of active suicidal ideation or refused to undergo any further psychiatric evaluation; however, 66 patients were unable to finish the STAI because they were discharged from the hospital or because their assessments related to their admission were interrupted or because they were exhausted. In all, 291 patients participated in the study by completing both the BDI and STAI questionnaires. This number represents the population that was analysed. This sample of 291 people serves as the basis for all of the data shown in Tables 2 through 5.

	Both BDI+STAI Completed (n=291)	Only BDI Completed
Values are mean±SD when appropriate.		(11-00)
Age, y	63±13	66±12
Male sex, %	64.2	61.6
Race, white/black/other, %	71.6/17.6/3.9	65.1/29.1/5.8
Married, %	66.2	63.6
NYHA class >I, %	52.8/38.8/8.5	44.2/47.7/8.1
LVEF, %	30.2±13.3	29.5±13.1
Ischemic cause of CHF, %	53.1	58.1
BDI score	1.4±0.5	1.4±0.5
Reason for index admission, %		
CHF	39.9	27.9
Acute MI	19.2	16.3
IHD	21.4	30.2
Arrhythmia	16.2	19.8
Other	3.3	5.8
ACE inhibitor use, %	69.9	75.8
β-Blocker use, %	34.9	33.3
Selective serotonin reuptake inhibitor use,	9.6	9.1
%		
Tricyclic antidepressant use, %	4.5	6.1
One-year mortality, %	15.7	17.9

Table 1: Baseline Characteristics

Table 2: Mean Measures of Anxiety and Depression by Vital Status at 1 Year

	Dead	Alive	Р
State-A	36.2±15.1	32.9±12.4	0.18
Trait-A	34.7±13.0	33.2±11.4	0.48
BDI score	11.5±8	8.3±7	0.03

Table 3: Mean Measures of Anxiety and Depression by Origin of Heart Failure

	Ischemic	Nonischemic	Р
State-A	32.8±13.0	34.3±12.5	0.35
Trait-A	32.7±11.5	34.5±11.9	0.20
BDI score	8.8±7.5	9.3±7.9	0.52



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Table 4: Unadjusted Relations of Anxiety, Depression, and Conventional Cardiac Risks With 1-Year Mortality

Variable	Relative Risk [*]	95% CI	Р	
*For each 1-unit increase in continuous variables.				
Ischemic origin of CHF	2.602	1.315–5.149	<0.01	
NYHA class	1.774	1.169–2.693	<0.01	
BDI score	1.041	1.010-1.073	<0.01	
Age	1.035	1.009–1.062	<0.01	
State-A	1.017	0.996–1.039	0.12	
LVEF	1.010	0.987-1.032	0.41	
Trait-A	1.010	0.985–1.035	0.44	

Table 5: Relation Between Anxiety and Depression and 1-Year Mortality, Adjusted for Conventional Cardiac Risk Factors

	Relative Risk[*]	95% CI	Р		
*For each 1-unit increase.					
State-A model					
BDI	1.036	0.998-1.075	0.06		
State-A	1.014	0.988-1.040	0.30		
Trait-A model					
BDI	1.045	1.008-1.084	0.02		
Trait-A	1.001	0.971-1.031	0.97		

Patients who had just done the BDI were found to be older, less likely to be white, less likely to be married, and to have a higher NYHA class than those who had completed both tests (Table 1). A greater number of patients had also been hospitalised for chest discomfort or arrhythmia, which would have needed further operations to be performed within the hospital. While they had a higher mortality rate after one year (17.9% compared to 15.7% for those who completed both surveys), none of these differences were statistically significant.

Anxiety and Depression Measures

The mean score on State-A was 33.5 with a standard deviation of 12.8, while the mean score on Trait-A was 33.5 with a standard deviation of 11.7. In all, 29% of patients had a score on the State-A scale below 40, and 28% of patients had a score on the Trait-A scale below 40. The BDI score ranged from 8.7 to 7.6 on average. The correlation between State-A and Trait-A scores was quite strong (r = 0.85, P 0.01). Similarly, scores on the State-A and Trait-A scales associated substantially with scores on the BDI (r=0.52 and r=0.59, respectively; both P0.01 for each). Patients who had passed away at the one-year mark had higher BDI scores than those who had survived (P=0.03) (Table 2), but the State-A and Trait-A scores did not vary depending on vital status at the one-year mark.

Relation of Anxiety and Depression and Conventional Cardiac Risk Factors

Age was shown to have a negative correlation with both the State-A and Trait-A scores; specifically, the younger the patient, the higher the anxiety level (r=0.18, P=0.01; r=0.13, P=0.03; respectively). On the other hand, there was no association between anxiety and either the baseline LVEF (State-A, P=0.45; Trait-A, P=0.60), the NYHA class (P=0.71 and P=0.70), or the CHF origin (Table 3).

Despite the fact that measures of anxiety and depression had a strong correlation with one another and that anxiety was inversely linked with age, sadness was not connected with age (r = 0.07, P = 0.27). Depression was not linked with either the LVEF at the beginning of the study (P = 0.77), the NYHA class (P = 0.25), or the CHF aetiology (P = 0.30).

Prognostic Ability of Anxiety and Depression

There was no correlation between scores on either State-A or Trait-A with unadjusted mortality after one year. Nonetheless, BDI scores were shown to be a significant predictor of death (Table 4). Age, NYHA class, and ischemic CHF aetiology were strongly linked with death, which was consistent with the findings of prior investigations (Table



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4). Trait-A was not associated with mortality in a Cox proportional-hazards model after adjustments were made for BDI scores, age, baseline LVEF, NYHA class, and ischemic CHF origin; however, BDI scores continued to be significantly associated with increased mortality (hazard ratio, 1.045; 95% confidence interval [CI], 1.008 to 1.084). (Table 5). State-A was not linked with mortality in a comparable model after adjusting for BDI scores, age, baseline LVEF, NYHA class, and the presence of ischemic CHF as the cause of CHF; however, BDI scores were no longer substantially associated with death after making these adjustments (Table 5).

Discussion

This is the first research of its kind to investigate the severity of anxiety and its influence on CHF patients' prognosis, both on its own and in conjunction with depression. Even though anxiety and depression were positively and highly correlated in these patients, only depression was associated with increased mortality at 1 year independent of conventional cardiac risk factors and Trait-A. This was the case despite the fact that anxiety and depression were positively correlated with one another. The BDI, which is a questionnaire that can be easily self-administered, appears to be a useful and reliable tool for identifying CHF patients who are at high risk of death related to depression or negative affect; the increase in BDI by one unit was associated with a 4% increase in mortality over the course of one year. The predictive relationship between depression and mortality seems to be mitigated in State-A, on the other hand, which is a significant difference.

There has only been one previous research that looked at the connection between CHF patients' anxiety and their risk of death. Throughout the course of their research on the capacity of various psychological characteristics to predict readmission and mortality, Konstam and his colleagues evaluated the patients who had self-reported symptoms of depression and anxiety as part of the Studies of Left Ventricular Dysfunction (SOLVD). Neither depression nor anxiety were shown to be related with worse outcomes in multivariate analyses. The authors did not provide any information on the depression and anxiety questionnaires that were utilised in their research.

The self-reported presence of anxiety symptoms, as measured by the Crown-Crisp Index, has been shown to be associated with an increased risk of IHD. Research using various self-reported anxiety measures, on the other hand, have generated mixed findings in healthy people as well as in patients with established IHD. For instance, Frasure-Smith et al. found that having a STAI score of less than 40 was related with a more than threefold increase in the number of cardiac events that occurred one year following a MI (P 0.01) This was in comparison to having a STAI score of more than 40. According to the findings of our research, a STAI score lower than 40 did not indicate an increased likelihood of passing away. According to the findings of Moser and Dracup, high levels of anxiety, as evaluated by the Short Symptom Inventory 2 days after MI, were related with a risk of in-hospital complications that was 4.9 times higher than the incidence of problems seen in patients with lower levels of anxiety. In multiple regression analysis, Denollet and Brutsaert found that the negative correlation between anxiety and mortality after MI was not independent from type D personality. They came to this conclusion after looking at the data. While both sadness and anxiety were strongly related with a worse quality of life, Lane et al. found that neither could accurately predict death or cardiac events after MI. None of these research looked at people with CHF, nor did they investigate whether or not anxiety and depression are related to one another.

Anxiety is a distinct emotional experience, despite the fact that it is commonly comorbid with depression and that the two conditions tend to overlap risk factors. Anxiety is typically described as a fear-based, negative affective state that is oriented towards the future. It is triggered by the individual's perception of a threat and is characterised by the individual's belief that they are unable to predict, control, or achieve the outcomes they desire in future scenarios. Depression is not only characterised by a very negative affective state but also by an exceptionally low degree of positive affect, making it distinctive from other affective disorders. When it comes to coping and, later on, determining one's prognosis, the various mental components may play distinct roles. Both depression and anxiety were significantly associated with mortality in an investigation into the effects of depression and anxiety on 5-year cardiac mortality among 896 MI survivors. However, only depression remained significantly associated with mortality after the researchers adjusted for the severity of the cardiac disease. According to the findings of the Montreal Heart Attack Readjustment Trial (M-HART), men who suffer from high levels of anxiety have the potential to considerably improve their chances of long-term survival by adjusting their coping strategies. Higher anxiety levels were associated with significantly reduced 5-year mortality after exercise testing, as discovered by Herrmann et al. in a study involving approximately 5000 people who underwent exercise testing. In contrast, depression was associated with significantly higher mortality after the testing. The clinical features of the patients in that research were quite different from those of our patients; in instance, less than fifty percent of their patients had no known IHD.



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It is not obvious why anxiety was not connected with higher mortality among our patients, despite the fact that it has a strong association with depression. It has been shown beyond a reasonable doubt that those who suffer from phobic anxiety or panic disorder are more likely to have IHD. Nevertheless, research on the connection between nonphobic anxiety and IHD has produced mixed results. The phobic anxiety component was not examined in this research project. The symptoms of panic may represent the more severe end of the range of anxiety, or they may reflect the bodily reactions of the body, particularly of the cardiovascular system, to negative emotions, such as dread of the unknown future. Since phobic anxiety and panic disorder are less common than general anxiety, the STAI may not be as sensitive to the symptoms of these specific types of anxiety disorders.

Anxiety has been postulated to be linked to ischemic heart disease (IHD) through stress-induced increases in the activity of the sympathetic nervous system and the production of catecholamines. Despite the fact that anxiety has been linked to elevated levels of plasma norepinephrine, the validity of this possible relationship has not been verified by direct experimentation. Others have hypothesised a connection between anxiety and the electrical instability of the myocardium; electrophysiology studies have demonstrated that ventricular premature beats increase with stimulation from certain psychological stressors and decrease with a reduction in sympathetic neural inputs. Others have hypothesised a connection between anxiety of the myocardium. Nevertheless, research has not found evidence to support the hypothesis that prolonged anxiety is linked to arrhythmia.

The correlation between anxiety and lower heart rate variability was the most compelling piece of evidence supporting the proposed mechanism. Individuals suffering from depression, on the other hand, have less variation in their heart rates. Evaluations of anxiety that are conducted independently of depression and the prognosis of individuals with heart conditions may offer conclusive results.

Patients diagnosed with CHF need to have their depression properly diagnosed and managed in order to get quality treatment. The majority of patients, on the other hand, exhibit signs of anxiety rather than sadness. Because of the high association between these states, it is important for carers to do depression screenings whenever patients report or seem to have anxiety. Because of their anxiolytic effects, antidepressant effects, reasonably benign profile, and possibly heart protectiveness, selective serotonin reuptake inhibitors should be explored as a treatment option for anxiety. While tricyclic antidepressants are quite effective in treating anxiety, doctors do not advise their usage for patients with ischemic heart disease or congestive heart failure because of the drugs' negative effects on the heart. Because of the risk of adverse effects, traditional anxiety medications like benzodiazepines and antihistamines may need to be completely avoided. Non-pharmacological techniques to relieving symptoms of anxiety and depression include structured psychotherapies like cognitive-behavioral therapy and fitness training.

In conclusion, despite the significant degree of correlation between anxiety and depression, only depression was shown to be associated with an elevated risk of death in our CHF patients. It is questionable if depression continues to be a risk factor for death in these individuals given the progression that has occurred in the therapy of the illness since our data were gathered in 1998. Nonetheless, taking into account the enormous influence that depression has on one's quality of life as well as its possible connection to mortality, the management of depression in CHF patients has to be improved. There is a need for future research that evaluates the connections between various emotional states, heart disorders, and the probable processes behind these connections.

Factor Analysis

Factor analysis is a statistical technique that is commonly used to identify underlying factors or dimensions that explain the variance in a set of observed variables. It is a multivariate technique that seeks to explain the correlation between multiple variables in terms of a smaller number of underlying dimensions or factors.

Factor analysis can be used for a variety of purposes, such as reducing the number of variables in a dataset, identifying latent constructs or dimensions, and exploring the structure of a dataset. The output of factor analysis is a set of factors, along with their associated factor loadings, which represent the extent to which each variable is related to each factor.

In the context of the psychological study on anxiety and depression in patients with chronic RHD, factor analysis could be used to identify the underlying factors that contribute to anxiety and depression in this population. The HADS questionnaire consists of 14 items, with seven items measuring anxiety and seven items measuring depression. Factor analysis could be used to identify the underlying dimensions or factors that explain the variance in these items.



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For example, factor analysis may reveal that the anxiety items on the HADS can be explained by two underlying factors: "worry and apprehension" and "physical symptoms of anxiety". Similarly, the depression items on the HADS may be explained by two factors: "negative affect" and "anhedonia and fatigue".

Factor analysis can be performed using various software programs, such as SPSS, R, and SAS. It is important to consider the assumptions of factor analysis, such as the normality of the data and the absence of multicollinearity, and to interpret the results carefully, as factor analysis is not a causal model and cannot prove causality.

Factor analysis can be a useful statistical technique in psychological studies for identifying underlying factors that may be contributing to the symptoms of anxiety and depression in patients with chronic rheumatic heart disease.

To conduct factor analysis on this data, the following steps can be taken:

- 1. Choose the variables to be included in the analysis. In this case, variables related to anxiety and depression in patients with chronic rheumatic heart disease should be selected. These could include measures of anxiety and depression symptoms, such as the Hospital Anxiety and Depression Scale (HADS), as well as measures of other potential contributing factors, such as physical symptoms and quality of life.
- 2. Decide on the type of factor analysis to be used. There are several types of factor analysis, including exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). EFA is often used when the underlying structure of the variables is not well-known, whereas CFA is used when the researcher has a clear hypothesis about the underlying structure of the variables.
- **3.** Conduct the factor analysis. This involves running the statistical analysis on the selected variables using software such as SPSS or R. The output will include information about the number of factors that best explain the variance in the data, as well as the loadings of each variable on each factor.
- 4. Interpret the results. Once the factor analysis is complete, the researcher will need to interpret the results to understand the underlying factors that may be contributing to the symptoms of anxiety and depression in patients with chronic rheumatic heart disease. This may involve naming the factors based on the variables that load most heavily on them, and considering how these factors may be related to each other and to the overall symptoms of anxiety and depression.

Overall, factor analysis can be a useful tool for understanding the underlying factors that contribute to anxiety and depression in patients with chronic rheumatic heart disease, and for developing more targeted interventions to address these symptoms.



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Figure 1 SEM Model of Anxiety and Depression in Patients with Chronic RHD

			Estimate	S.E.	C.R.	Р
DEP	<	LTT	.645	.073	8.874	***
DEP	<	EX	.191	.066	2.871	.004
DEP	<	AG	053	.055	976	.329
DEP	<	FS	.217	.033	6.555	***
DEP	<	PT	002	.032	061	.952
ANX	<	LTT	.364	.076	4.801	***
ANX	<	EX	040	.058	699	.485
ANX	<	AG	.035	.047	.753	.452
ANX	<	FS	.370	.037	9.955	***
ANX	<	PT	.006	.027	.239	.811
ANX	<	DEP	.206	.072	2.862	.004

Table 6: Relation Between Anxiety and Depression

ANX: Anxiety **DEP**: Depression

The probability of getting a critical ratio as large as 8.874 in absolute value is less than 0.001. In other words, the regression weight for **LTT** in the prediction of **DEP** is significantly different from zero at the 0.001 level (two-tailed).

The probability of getting a critical ratio as large as 2.871 in absolute value is .004. In other words, the regression weight for **EX** in the prediction of **DEP** is significantly different from zero at the 0.01 level (two-tailed).

The probability of getting a critical ratio as large as 0.976 in absolute value is .329. In other words, the regression weight for **AG** in the prediction of **DEP** is not significantly different from zero at the 0.05 level (two-tailed).



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The probability of getting a critical ratio as large as 6.555 in absolute value is less than 0.001. In other words, the regression weight for **FS** in the prediction of **DEP** is significantly different from zero at the 0.001 level (two-tailed).

The probability of getting a critical ratio as large as 0.061 in absolute value is .952. In other words, the regression weight for **PT** in the prediction of **DEP** is not significantly different from zero at the 0.05 level (two-tailed).

The probability of getting a critical ratio as large as 4.801 in absolute value is less than 0.001. In other words, the regression weight for **LTT** in the prediction of **ANX** is significantly different from zero at the 0.001 level (two-tailed).

The probability of getting a critical ratio as large as 0.699 in absolute value is .485. In other words, the regression weight for **EX** in the prediction of **ANX** is not significantly different from zero at the 0.05 level (two-tailed).

The probability of getting a critical ratio as large as 9.955 in absolute value is less than 0.001. In other words, the regression weight for **FS** in the prediction of **ANX** is significantly different from zero at the 0.001 level (two-tailed).

The probability of getting a critical ratio as large as 0.239 in absolute value is .811. In other words, the regression weight for **PT** in the prediction of **ANX** is not significantly different from zero at the 0.05 level (two-tailed).

The probability of getting a critical ratio as large as 2.862 in absolute value is .004. In other words, the regression weight for **DEP** in the prediction of **ANX** is significantly different from zero at the 0.01 level (two-tailed).

V. CONCLUSIONS

Despite the fact that anxiety and depression have a strong relationship in CHF patients, the presence of depression alone is predictive of a much poorer prognosis for these individuals. Ischemic heart disease (IHD) patients have been the subject of a significant amount of research that investigates the roles that depression and anxiety play in the condition. While many people have hypothesised that there is a connection between depression, anxiety, or both and the development and prognosis of ischemic heart disease (IHD) outside of traditional cardiac risk factors, the data suggests that depression is the most likely culprit. The evidence that supports the idea that anxiety has an influence is less consistent. Fear, which is a component of anxiety, manifests itself in a variety of ways, including cognitive, neurological, and behavioural ones. Anxiety is defined as a very unpleasant emotion that includes a component of dread. It often occurs at the same time as depression, particularly in populations of older people and those with medical conditions. Anxiety symptoms may have a negative association with a high risk of ischemic heart disease (IHD), and it has been linked to elevated risks of myocardial infarction (MI) and fatal ischemic heart disease (IHD). According to the findings of one research, men with anxiety had a risk of sudden death that is about six times greater than the rate of men without anxiety. Nevertheless, the findings of other investigations have not been consistent with these findings. Anxiety has not been shown to be consistently connected with a poor prognosis in individuals who have been diagnosed with IHD. According to the findings of two studies that looked at the relationship between depression and anxiety in a sample of people with IHD, poor outcomes may be independently related with depression but not anxiety. Recent years have seen an increase in research on the impact that these feelings play in the condition known as chronic heart failure (CHF). According to our findings, depression is a separate and independent risk factor for mortality and morbidity in individuals who have CHF, regardless of the source of their condition (ischemic or nonischemic). Nevertheless, the influence of worry on the prognosis of CHF patients has only been investigated in a small number of research. We examined the predictive significance of anxiety and its interaction with depression in patients who were diagnosed with CHF by doing a secondary analysis on our initial data set. This study was prespecified.

An established instrument for screening for depression in a variety of demographics, the Beck Depression Inventory (BDI) is a 21-item questionnaire that participants were asked to self-administer. After that, patients were given the Spielberger State-Trait Anxiety Inventory (STAI) scale to fill out in order to determine the severity of their anxiety symptoms. Both self-reported state anxiety (State-A) and trait anxiety may be measured using the STAI's two different measures (Trait-A). A person's predisposition for emotional vulnerability may influence the degree of intensity of the emotional state that they are experiencing at any given time. This can be seen of as a "diathesis" for emotional vulnerability. The emotional state that is brought on by a condition is referred to as State-A, and it is regarded to be fleeting since it might persist for minutes, hours, or even days. The term "Trait-A" refers to relatively enduring individual differences in anxiety proneness, also known as the "diathesis of emotional vulnerability." This diathesis of emotional vulnerability accounts for differences between individuals in the tendency to perceive stressful situations as dangerous or threatening, as well as the tendency to react to such situations by increasing the intensity of their "State-A." Trait-A The STAI has been widely utilised and modified over the course of the last 40 years to evaluate State-A



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and Trait-A in a wide variety of groups, both healthy and sick. The sensitivity of the State-A scale to external stress has been shown time and time again in studies on people's emotional responses to different kinds of procedures and situations. 16 Trait-A ratings, on the other hand, do not alter significantly both before and after these kinds of external changes. One other distinctive quality of the STAI is that it provides a "purer" measurement of anxiety that is distinct from depression. Since it is better able to differentiate between anxiety and depression, it has shown to be particularly beneficial in study on people who suffer from depression. A score of 40 on either the State-A or the Trait-A questionnaire has been used to divide patients into groups with mild and high levels of anxiety.

This psychological study aims to explore the prevalence and severity of anxiety and depression in patients with chronic Rheumatic Heart Disease (RHD). RHD is a chronic disease that affects the heart valves and can lead to serious cardiac complications. The study will use a cross-sectional design and will include patients with RHD who are currently receiving treatment at a tertiary care hospital. The participants will be asked to complete standardized measures of anxiety and depression. The study will also collect data on the participants' demographic characteristics, clinical history, and current medical treatment.

Rheumatic heart disease (RHD) is a chronic condition that affects the heart valves, and is a consequence of rheumatic fever. RHD is still prevalent in many low-income countries, and is associated with high morbidity and mortality rates. Chronic RHD is characterized by progressive valvular damage, leading to heart failure, arrhythmias, and thromboembolic events. The management of RHD requires long-term medical treatment, and in severe cases, surgical intervention may be required.

RHD can have a significant impact on the mental health and well-being of patients. Anxiety and depression are common mental health conditions that can be experienced by patients with chronic RHD, and can have a negative impact on their quality of life. The management of anxiety and depression in patients with chronic RHD is important, as it can improve their overall health and well-being, and reduce the risk of cardiac complications.

In addition to the HADS, participants will be asked to complete a demographic questionnaire that will collect information on their age, gender, education level, marital status, and employment status. Participants will also be asked to provide information on their clinical history, including the duration of their RHD, the severity of their RHD, and the treatment they are currently receiving. Medical records will be reviewed to confirm the participants' clinical history and treatment.

The data collected will be analyzed using descriptive statistics to determine the prevalence and severity of anxiety and depression in the sample. Inferential statistics, such as chi-square tests and regression analyses, will be used to identify the factors associated with anxiety and depression in patients with chronic RHD.

The findings of this study will have important implications for the management of patients with chronic RHD. The identification of the prevalence and severity of anxiety and depression in this population will help healthcare professionals to better understand the mental health needs of patients with chronic RHD, and to develop targeted interventions to improve their mental health and overall quality of life. The results of this study may also provide insights into the effectiveness of current treatments for anxiety and depression in patients with chronic RHD.

This study has several limitations that should be considered. The study is limited to patients who are receiving treatment at a tertiary care hospital, and may not be representative of the wider population of patients with chronic RHD. The study is also limited to self-reported measures of anxiety and depression, and may not capture the full range of mental health conditions experienced by patients with chronic RHD.

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