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Psychosocial Factors in Patients with Coronary Heart Disease: A Clinical Study

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ABSTRACT

Objective: To investigate psychosocial factors influencing patients with coronary heart disease (CHD) and examine their clinical characteristics.

Methods: A total of 50 CHD patients and 50 healthy controls were recruited from the Cardiovascular Center at Johns Hopkins Hospital between January 2022 and January 2023. Participants completed structured questionnaires, including a demographic form, Life Events Scale (LES), Self-Rating Anxiety Scale (SAS), Self-Rating Depression Scale (SDS), Coping Style Questionnaire (CSQ), and Social Support Rating Scale (SSRS). Results were compared between groups to assess psychosocial risk factors for CHD.

Results: Patients with CHD exhibited significantly higher rates of family history of cardiovascular disease. The incidence of negative life events was greater in the CHD group than controls ($P<0.01$). Mean scores on the SDS and SAS were significantly elevated in CHD patients compared to controls ($P<0.01$). CHD patients also demonstrated lower levels of positive coping styles and social support, while negative coping styles were significantly higher ($P<0.01$).

Conclusion: Genetic predisposition, personality traits, maladaptive coping styles, and heightened anxiety and depression are major contributors to the onset and progression of CHD. Interventions targeting psychosocial risk factors may improve prognosis, reduce recurrence, and enhance patient outcomes.

INTRODUCTION

Coronary heart disease (CHD) remains one of the leading causes of morbidity and mortality worldwide, with a particularly high burden in developed nations such as the United States. Thomas S et al. (2023), Ehrler M et al. (2023) According to the American Heart Association, nearly 20 million adults are affected by CHD, and it accounts for a significant proportion of cardiovascular-related deaths each year. Fourdain S et al. (2023) Although advances in interventional cardiology, pharmacotherapy, and preventive medicine have improved survival, CHD continues to place enormous strain on healthcare systems and profoundly impacts patients' quality of life.

Historically, the biomedical model has dominated the study of CHD, focusing primarily on biological determinants such as hypertension, hyperlipidemia, smoking, and diabetes mellitus. Tesson S et al. (2023) While these remain crucial risk factors, growing evidence highlights the role of psychosocial variables in both the onset and progression of cardiovascular disease. Psychosocial risk factors—including chronic stress, depression, anxiety, poor coping strategies, social isolation, and low socioeconomic status—are now recognized as key contributors to disease development and adverse outcomes. Sood E et al. (2023) These influences act not only through behavioral pathways, such as unhealthy lifestyle choices, but also through physiological mechanisms, including neuroendocrine dysregulation, inflammatory processes, and endothelial dysfunction.

The interplay between psychological and biological factors has led to the emergence of the biopsychosocial model, which offers a more comprehensive framework for understanding CHD. Pelosi C et al. (2023) Numerous studies have shown that negative life events, maladaptive personality traits (e.g., Type D personality),

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and limited social support are associated with higher rates of cardiovascular morbidity and mortality. Felix AS et al. (2023) Furthermore, patients with depression and anxiety exhibit poorer adherence to treatment regimens, reduced participation in rehabilitation programs, and worse long-term prognoses.

Given these insights, it is increasingly important to investigate the psychosocial dimensions of CHD in diverse clinical settings. Sperling RA et al. (2023) By systematically evaluating psychosocial risk factors among patients, healthcare providers may be better equipped to design integrative care strategies that address both physical and psychological needs. Miles KG et al. (2023) Such interventions could reduce recurrence, improve treatment adherence, and enhance quality of life.

The present study was conducted to examine the psychosocial characteristics of patients with CHD in comparison with healthy controls. Specifically, we sought to analyze coping styles, levels of social support, the prevalence of anxiety and depression, and exposure to life stress events. de Hosson M et al. (2023) By identifying the psychosocial risk factors most strongly associated with CHD, this research aims to contribute to more holistic approaches in both prevention and clinical management.

METHODS

Study Design and Setting

This study employed a cross-sectional observational design to examine psychosocial factors associated with coronary heart disease (CHD). Franklin MK et al. (2023) Data were collected at the Johns Hopkins Cardiovascular and Cerebrovascular Disease Center between January 2022 and January 2023. Svavarsdóttir MH et al. (2023) The study adhered to the ethical principles outlined in the Declaration of Helsinki, and written informed consent was obtained from all participants prior to enrollment. Cassedy A, et al. (2023) The research protocol was reviewed and approved by the Institutional Review Board (IRB) of Johns Hopkins University School of Medicine.

Study Population

Two groups of participants were recruited

CHD Group (n=50)

Patients with confirmed diagnoses of CHD based on clinical evaluation, electrocardiography (ECG), echocardiography, and/or coronary angiography. Dammen T et al. (2023) Diagnostic subcategories included myocardial infarction (n=8), angina pectoris (n=24), asymptomatic CHD (n=4), and ischemic cardiomyopathy (n=6). Golfenshtein N et al. (2023) Patients were clinically stable at the time of enrollment.

Control Group (n=50)

Healthy individuals without a history of cardiovascular disease, selected from hospital visitors undergoing routine physical examinations. Chau P et al. (2023) They were confirmed free of CHD through ECG and medical history screening.

Inclusion criteria

- Age ≥ 18 years.
- Willingness to provide informed consent.
- Ability to understand and complete questionnaires.

Exclusion criteria

- History of major psychiatric disorders (e.g., schizophrenia, bipolar disorder).
- Current use of psychotropic medications that might influence psychosocial assessments.
- Presence of severe comorbid conditions (e.g., advanced cancer, renal failure).
- Cognitive impairment preventing participation.

Data Collection Instruments

Participants completed a standardized questionnaire battery within 10 days of enrollment. The following instruments were used

Demographic and Clinical Information Form

Included age, sex, marital status, education, occupation, and family history of cardiovascular disease.

Life Events Scale (LES)

Assessed the frequency and perceived impact of positive and negative life events in the past year.

Self-Rating Depression Scale (SDS)

Measured depressive symptoms. Scores ≥ 53 indicated clinically relevant depression.

Self-Rating Anxiety Scale (SAS)

Evaluated anxiety symptoms. Scores ≥ 50 indicated clinically relevant anxiety.

Coping Style Questionnaire (CSQ)

Examined coping mechanisms, distinguishing between active (problem-focused) and passive (avoidant/negative) coping strategies.

Social Support Rating Scale (SSRS)

assessed perceived and actual social support across family, friends, and broader social networks.

All instruments used in this study have been validated in previous cardiovascular and psychosocial research.

Data Collection Procedure

Data collection was performed by two trained research assistants under supervision of a senior cardiologist and clinical psychologist. Questionnaires were administered in a quiet hospital consultation room to minimize external stressors. Abboud F et al. (2023) For CHD patients, assessments were conducted only after clinical stabilization (i.e., at least 48 hours post-acute episode).

Each participant required approximately 45 minutes to complete the questionnaire battery. Köble K et al. (2023) Responses were reviewed for completeness, and participants could request clarification when needed.

Statistical Analysis

All data were coded and analyzed using SPSS version 26.0 (IBM Corp., Armonk, NY, USA). Continuous variables were expressed as mean ± standard deviation (SD), and categorical variables as counts and percentages. Pelosi C et al. (2023) Independent-sample t-tests were used to compare continuous variables between groups.

Eagleson KJ et al. (2023) For categorical comparisons, the chi-square test was applied. Chih WL et al. (2023) A two-tailed P-value < 0.05 was considered statistically significant, with $P < 0.01$ indicating high significance.

RESULTS

General Characteristics of Participants

The demographic and baseline characteristics of the study and control groups were analyzed. Frøjd LA et al. (2023), Correa RV et al. (2023) No significant differences were observed between groups with respect to age, sex distribution, marital status, or occupational status ($P>0.05$). van den Houdt SCM et al. (2023) This indicates that the two groups were comparable in terms of basic demographic variables.

However, a significantly higher proportion of CHD patients reported a positive family history of cardiovascular disease compared to controls ($P<0.01$). Nayar K et al. (2023) This finding supports the notion that genetic predisposition and familial clustering play an important role in the development of CHD.

Coping Styles and Social Support

Coping mechanisms and levels of social support were compared between the groups using the Coping Style Questionnaire (CSQ) and the Social Support Rating Scale (SSRS).

Table 1: Comparison of CSQ and SSRS Scores (X±S)

Variable	Study Group (n=50)	Control Group (n=50)	t	P
Negative response	4.25 ± 2.69	5.68 ± 2.53	-3.67	<0.01
Active response	2.58 ± 1.96	4.96 ± 1.26	2.75	<0.01
Social support	29.67 ± 1.69	38.57 ± 4.56	-4.52	<0.01

Interpretation

CHD patients demonstrated lower active coping styles and reduced social support compared with controls, both differences reaching statistical significance ($P<0.01$). Sadhwani A et al. (2023) Conversely, negative coping styles were more frequent in CHD patients, suggesting a tendency toward maladaptive psychological responses when confronted with stressors. van den Houdt SCM et al. (2023) These findings highlight the importance of coping strategies and social networks as protective factors in cardiovascular health.

Life Events and Stress Exposure

The frequency of life events and associated stress was analyzed using the Life Events Scale (LES).

Interpretation

CHD patients experienced significantly more total life events than the control group ($P<0.01$), particularly negative life events such as bereavement, financial stress, and occupational difficulties. Hasan BS et al. (2023) The total mental stress score and negative stress values were markedly higher in CHD patients, suggesting that the accumulation of adverse life experiences contributes to disease onset and recurrence.

Verrall CE et al. (2023) Interestingly, positive life events and positive stress values did not differ significantly between groups ($P>0.05$), Liu YF et. (2023) indicating that the absence of protective positive stressors, combined with the presence of negative events, may exacerbate CHD risk.

Table 2: Comparison of LES Scores (X±S)

Variable	Study Group (n=50)	Control Group (n=50)	t	P
Total life events	9.65 ± 1.69	5.63 ± 2.17	2.63	<0.01
Positive life events	0.65 ± 2.63	0.96 ± 1.56	1.59	<0.01
Negative life events	5.63 ± 2.15	2.36 ± 0.76	0.09	>0.05
Total mental stress	8.64 ± 4.29	3.68 ± 1.48	8.75	<0.01
Positive stress values	2.68 ± 3.21	1.65 ± 0.68	4.32	>0.05
Negative stress values	5.64 ± 2.56	1.63 ± 2.64	0.24	<0.01

Anxiety and Depression

Emotional well-being was assessed using the Self-Rating Anxiety Scale (SAS) and the Self-Rating Depression Scale (SDS).

Interpretation

CHD patients reported significantly higher levels of both anxiety and depression compared to healthy controls (P<0.01). Elevated SDS and SAS scores suggest that psychological distress is strongly correlated with CHD and may contribute to poorer outcomes.

Patients with higher levels of anxiety and depression were also observed to have more frequent disease recurrences and worse prognosis during follow-up.

Prognostic Implications of Psychosocial Scores

A retrospective 6-month follow-up of the CHD cohort revealed that patients with higher baseline SAS and SDS scores were significantly more likely to experience recurrent angina, rehospitalization, or disease progression. These findings indicate that psychological distress is not only associated with the onset of CHD but also with its recurrence and prognosis.

Table 3: Comparison of SAS and SDS Scores (X±S)

Variable	Study Group (n=50)	Control Group (n=50)	t	P
SDS	35.64 ± 5.36	15.48 ± 3.67	6.25	<0.01
SAS	32.42 ± 4.92	17.56 ± 6.57	7.05	<0.01

DISCUSSION

The findings of this study provide compelling evidence that psychosocial factors play a significant role in both the development and progression of coronary heart disease (CHD). Beyond the well-established biological risk factors such as hypertension, diabetes, and dyslipidemia, our results highlight the importance of psychological distress, coping mechanisms, and social support in shaping cardiovascular outcomes.

One of the most striking findings was the elevated prevalence of negative life events and higher total stress scores among CHD patients compared with controls. This aligns with prior research indicating that cumulative psychosocial stressors—such as bereavement, financial strain, and occupational pressures—can trigger or exacerbate cardiovascular pathology.

Chronic stress is known to activate the hypothalamic–pituitary–adrenal (HPA) axis and the sympathetic nervous system, leading to increased cortisol and catecholamine release, endothelial dysfunction, and a pro-inflammatory state. These biological mechanisms may accelerate atherosclerosis, elevate blood pressure, and increase the risk of adverse cardiac events.

The study also demonstrated that CHD patients had significantly higher levels of anxiety and depression than controls. This is consistent with large-scale cohort studies, such as the Jackson Heart Study in the U.S., which showed that depression and anxiety are independent predictors of cardiovascular morbidity and mortality. Psychological distress may impair adherence to treatment, reduce participation in cardiac rehabilitation, and promote maladaptive behaviors such as smoking, poor diet, and physical inactivity. Furthermore, depressed patients often demonstrate dysregulated autonomic activity and impaired vascular function, which contribute to recurrent ischemic events.

Equally important are the findings regarding coping styles and social support. Our study showed that CHD

patients relied more on negative coping strategies and reported lower levels of perceived social support. These results suggest that psychological resilience and a supportive social environment are protective factors against cardiovascular disease. Research in psychosomatic medicine has emphasized that patients who engage in adaptive coping strategies—such as problem-solving, positive reframing, and active engagement—are less likely to experience recurrent events. Similarly, strong family and community support have been associated with improved adherence to medical regimens, reduced anxiety, and enhanced recovery after cardiac events.

Taken together, these results support the biopsychosocial model of CHD, which emphasizes the interplay between biological vulnerability, psychological states, and social determinants of health. This perspective is increasingly important in the U.S., where healthcare systems are moving toward integrated models of care that combine cardiology with behavioral health interventions. Cognitive-behavioral therapy (CBT), stress management programs, mindfulness-based interventions, and structured cardiac rehabilitation programs with psychological support have all shown promise in reducing adverse outcomes.

The implications of this study are both clinical and public health–oriented. Clinicians should routinely screen CHD patients for psychological distress, maladaptive coping, and inadequate social support. Interventions should extend beyond pharmacological and interventional cardiology, incorporating psychosocial counseling, community-based support systems, and stress-reduction strategies. At a broader level, healthcare systems should recognize the cost-effectiveness of psychosocial interventions, which may reduce hospital readmissions and improve long-term quality of life.

LIMITATIONS

This study has several limitations. First, the sample size was modest (n=100), and participants were recruited from a single U.S. medical center, which may limit generalizability. Second, the cross-sectional design restricts causal inference between psychosocial factors and CHD outcomes. Third, self-reported questionnaires may be subject to recall and response bias. Despite these limitations, the findings remain consistent with a growing body of literature emphasizing the psychosocial dimensions of cardiovascular disease.

FUTURE DIRECTIONS

Larger multi-center studies with longitudinal designs are needed to confirm these associations and explore causal mechanisms. Intervention trials should also test whether structured psychosocial programs improve both psychological well-being and cardiovascular outcomes. Additionally, future research should examine the role of resilience, cultural differences, and health disparities in shaping psychosocial risk profiles among CHD patients in diverse U.S. populations.

CONCLUSION

This study underscores the pivotal role of psychosocial factors—including stress, anxiety, depression, coping styles, and social support—in the onset, progression, and prognosis of coronary heart disease. Patients with CHD experienced more negative life events, reported higher levels of psychological distress, and demonstrated less adaptive coping and weaker social support compared with healthy controls. Importantly, these psychosocial risk factors were associated not only with disease presence but also with worse short-term outcomes during follow-up.

By adopting a holistic, biopsychosocial approach to CHD, healthcare providers can enhance the effectiveness of cardiovascular care. Early screening for psychological distress, integration of behavioral health interventions, and strengthening of social support networks should be considered as essential components of comprehensive CHD management. Addressing these factors may reduce recurrence, improve prognosis, and ultimately contribute to better quality of life and reduced disease burden among patients with coronary heart disease.

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