Novel variables of psychiatric morbidity in patients with cardiovascular disease

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Abstract

Background: The importance of psychosocial factors in the development and expression of cardiovascular disease (CVD) has been debated; an extensive recent literature now establishes that psychosocial factors contribute significantly to the pathogenesis of CVD and need to be considered in the risk stratification and treatment of patients with CVD.

Objective: To find out the psychiatric correlates of CVDs. For this, sets of psychological inventories are used, which measure seven psychological variables.

Materials and Methods: To simplify the work, two types of group comparison were made. In the first type, the total sample (450) was divided into three groups, that is, CVD group (350), noncardiac group (50), and normal group (50). In the second type, the CVD group was further divided into seven groups (50 each) based on the diagnosis and was compared with the noncardiac and normal groups.

Result: It was found that cardiac subgroups have similarities and dissimilarities among themselves. Cardiac subgroup showed some similarities with the normal and noncardiac groups as well. Findings indicated that the cardiac group obtained higher scores in family stress, personal stress, extroversion–introversion, neuroticism, and depression and lower scores in social stress when compared with the normal and noncardiac groups.

Conclusion: Higher scores in family stress, personal stress, extroversion–introversion, neuroticism, and depression are the important variables to predict an individual to have the tendency of CVDs. Involvement of psychological factors in CVDs is true, not a myth.

KEY WORDS: Cardiovascular disease, stress, depression, extroversion–introversion, neuroticism

Introduction

Cardiovascular disease (CVD) is the leading cause of death worldwide. Heart disease affects people in their midlife years, often leading to a worsening of the socioeconomic situation and of psychosocial well-being. It influences not only the affected individuals but their families as well, and by putting a huge burden on care resources. In recent years, incidence of CVD has significantly increased in most developing countries including India.

The high comorbidity between psychiatric disorders and CVD has received growing attention in recent scientific literature.[1–6] Research findings reveal that mood and anxiety disorders are influencing CVD and are higher risk factors for cardiovascular-related morbidity and mortality.[2,7–9]

Depression in cardiac disease is common, persistent, underrecognized, and associated with worse health-related quality of life, recurrent cardiac events, and mortality.[10] Depressive symptoms have also been found to predict coronary heart disease (CHD) in cohorts not initially presenting cardiac symptoms.[11,12]

Psychological stress is one of the significant factors for CVD. It has been linked to higher rates of morbidity and all-cause mortality and is recognized as a risk factor for other health conditions. Acute stress influences heart rate and blood pressure.[13] The patients with cardiac disease were made emotionally vulnerable by continuous physical discomfort, fear of life, irritability, and pessimism. They show several negative characteristics such as easy susceptibility to family, social, and personal stress, and lack of objectivity and stability.

Although the links between psychological and cardiac functions remain a matter of curiosity, many of the gaps in scientific knowledge are beginning to be filled. Most common risk factors for CVDs are smoking, lack of exercise, obesity, and hypertension. It has been suggested that not all patients with CHD have one of the established coronary risk factors mentioned above and 10%–35% lack any of them.[14] These findings have led to a search for potential novel markers and other nontraditional risk factors to provide a better assessment of the cardiovascular risk.

Among the most important novel and nonconventional risk and prognostic indicators were psychosocial variables such as depression, hostility, personality, lack of social support, stress, low socioeconomic status, trait personality, and temperament.

This study was aimed to observe the association between novel psychiatric inventions in CVDs.

Materials and Methods

The samples for this study were collected from specialty clinic OPDs, MNR Medical College & Hospital, Sangareddy, Medak, and different hospitals of Hyderabad city, Telangana, India, during the two-year period from January 2013 to December 2014. Patient data were collected from hospitals and each patient was evaluated by a consultant cardiologist. A standard questionnaire was prepared for the data collection and consent was taken from each patient.

Selected subjects were divided into three groups. The first group comprised patients with CVD. Because of the broad limitations, CVD cannot be examined as a single unit. Hence, seven cardiac disease types were included in this category, such as atherosclerosis (ATH), myocardial infarction (MI), angina (AN), essential hypertension (EH), arrhythmia (ARR), endocarditis (EN), and pericarditis (PE). Fifty patients from each of these cardiac disease types were selected based on the diagnosis of expert cardiologists to constitute the cardiac disease group.

The second group comprised patients with noncardiac diseases. Fifty patients with diseases other than CVDs were randomly selected to be included in this group. Patients with a history of CVD were excluded from this group. The third group was a control group, which comprised 50 normal individuals. Individuals with a history of any major illness were excluded from this group.

In this study, three standardized inventories' schedule has been used under which seven emotional variables were studied. The variables are as follows:

1. Stress: Family stress, social stress, personal stress, and occupational stress
2. Depression
3. Personality inventory: Introversion–extroversion and neuroticism

Result

This study aimed to find out the psychological correlates of CVDs. The mean values of all the variables were compared on the basis of patient groups. The results were also compared with the two control groups [Table 1].

Age has a major role in molding the individuality of any individual. Generally, people have specific behavior patterns at different age levels. To a great extent, the behavior of an individual is influenced by his or her age.

In this study, sample distribution with respect to age in different group shows that majority of the patients with MI fall under the age group of 50–59 and 60–69 years, and the patients with AN and EN fall in the range of 50–59 years. Patients with hypertension and PE were found to be in the age range of 40–49 years. Similarly, patients with ARR and ATH fall in the age group of 30–39 and 30–49 years, respectively.

The normal group comprising 50 patients includes 25 men and 25 women. Thirteen patients are below 30 years, 27 between 31 and 49 years, and 10 in the age group of 50–70 and above. The noncardiac group also comprised 25 men and 25 women.

Discussion

This study indicates that the cardiac group obtained higher score than the normal and noncardiac groups in five of seven variables. The variables include family stress, personal stress, extroversion–introversion, neuroticism, and depression; lower scores have been reported in social stress. The values of family stress are not significant between cardiac and noncardiac groups and significant between normal and cardiac groups. The ATH group differs significantly on the variable social stress from the ARR, PE, and EN groups. The noncardiac group differs significantly from the ARR and PE groups. The normal group differs significantly from the ARR group alone. Orth-Gomer et al.[15] showed that attachment and social integration were lower in patients with CHD. This is contradictory to the findings of this study.

Results show significant difference among the various groups in the variable personal stress. The noncardiac group does not exhibit any significant difference. Research in this field by Shukla[16] and Stein et al.[17] supports the findings of this study, in which the three groups, namely normal, noncardiac, and cardiac, do not differ significantly in the effect of occupational stress.

It was found that cardiac group showed more extroverted traits than the normal and noncardiac groups. Among the cardiac group, EH group scored maximum followed by the MI and ATH groups. Detailed analysis by Shukla[16] showed that AN and MI groups did not have any significant difference on extroversion–introversion and neuroticism dimensions of

Table 1: Mean and SD values of all variables in different cardiac disease groups

Variables	Control	Noncardiac	MI	AN	EH	ARR	ATH	EN	PE
Family stress	27.68 ± 5.17	30.52 ± 8.17	39.96 ± 8.39	34.88 ± 10.04	35.90 ± 7.04	27.08 ± 5.17	31.76 ± 13.77	34.90 ± 8.25	30.04 ± 3.76
Social stress	32.74 ± 9.38	33.28 ± 7.75	32.10 ± 6.14	30.24 ± 6.74	31.84 ± 8.21	26.36 ± 3.04	35.90 ± 9.49	28.62 ± 8.80	26.58 ± 3.90
Personal stress	33.20 ± 10.04	34.80 ± 7.63	40.42 ± 5.95	38.62 ± 7.17	38.06 ± 6.99	37.78 ± 4.52	38.26 ± 12.82	37.50 ± 8.08	41.14 ± 5.75
Occupational stress	28.06 ± 10.50	31.32 ± 9.02	33.14 ± 9.94	30.50 ± 7.70	33.92 ± 7.24	28.62 ± 7.09	33.46 ± 11.96	27.76 ± 8.02	26.26 ± 7.27
Extroversion–introversion	12.84 ± 2.78	11.54 ± 2.21	14.24 ± 2.57	13.84 ± 4.05	14.88 ± 4.58	13.74 ± 2.51	14.18 ± 3.19	14.02 ± 3.10	12.56 ± 2.81
Neuroticism	11.22 ± 6.06	12.58 ± 3.41	11.64 ± 4.06	11.00 ± 3.90	13.56 ± 4.00	14.32 ± 3.38	14.62 ± 4.49	12.10 ± 4.82	17.04 ± 2.21
Depression	26.94 ± 6.01	30.34 ± 7.31	30.64 ± 5.57	29.98 ± 5.10	30.38 ± 5.33	30.28 ± 4.92	35.14 ± 9.82	29.48 ± 6.85	33.64 ± 5.39

MI, Myocardial Infarction; AN, angina; EH, essential hypertension; ARR, arrhythmia; ATH, atherosclerosis; EN, endocarditis; PE, pericarditis.

personality. Emotionally overresponsive individuals are prone to be neurotic. PE group had highest score for neuroticism followed by the ATH, ARR, and EH groups. Shukla[16] proved that the patients with CHD differ significantly on neuroticism from the general population. This is in agreement with the present results and at the same time asserts that patients with cardiac diseases have neurotic personality traits.

The cardiac and noncardiac groups differ from the normal group on the variable depression. Depression is an independent risk factor for CVD and for cardiac morbidity and mortality after MI.[18–20] Clinical depression is a stronger predictor of CHD than is merely a depressed mood.[20]

Besides the diagnosis of physical symptoms, a clear measurement of these psychological variables should also be conducted to enhance the efficiency of treatments. Along with prescription of drugs, counseling the patient to make him or her aware of the psychological impact of his or her physical ailments should also be done. Even if diagnosis is difficult because the physical symptoms are nonevident or remain subtle, an analysis of psychological variables and their measurement may help the physician to identify cardiac disease group.

Conclusion

Findings of the study conclude that family stress may cause CVDs. Social stress shows less impact on CVDs as compared to other variables. Personal stress may cause CVDs. Individuals experiencing high occupational stress are less prone to CVDs. Patients with cardiac disease are generally extroverts. High extroversion can lead to cardiac diseases. Persons with high neuroticism may end with cardiac diseases. Patients with cardiac diseases show neurotic tendencies. They are susceptible to depression. The interplay of physical and psychological factors in the development of CVDs is a truth and not a myth.

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