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Research Article

The Relationship of Psychological Distress and Framingham Score in Coronary Heart Disease Patients

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ABSTRACT

Introduction: Coronary artery disease is the leading cause of mortality and morbidity of both men and women accounting for over one third of total deaths.

Objectives: The main objective of the study is to evaluate the relationship of psychological distress and framingham score in coronary heart disease patients.

Material and methods: This descriptive study was conducted in Jinnah Hospital Lahore during 2019 to 2020. The data was collected from 100 CHD patients to find the relationship between psychological distress and framingham score.

Results: The data was collected from 100 CHD patients. The mean age of the study patients was 54.4 ± 10.6 years. Cigarette smoking was much more common in men than in women (32.6% vs. 0, P<0.001). The serum levels of creatinine, uric acid, and cTAS were significantly higher in men than in women (0.9 ± 0.2 vs. 0.7 ± 0.1, 7.6 ± 2.1 vs. 6.8 ± 2.3, and.0.4 ± 0.0 vs. 0.3 ± 0.1, respectively; P<0.001).

Conclusion: It is concluded that positive relationship between psychological distresses with the Framingham score is found, but it is not significant.

Keywords: Coronary Artery Disease, Framingham, World Health Organisation

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INTRODUCTION

Coronary artery disease is the leading cause of mortality and morbidity of both men and women accounting for over one third of total deaths. Coronary Heart Disease (CHD) is the leading cause of death world-wide. Although men have higher rates than women at all ages, and coronary disease occurs up to 10 years later in women CHD is a major cause of death for both sexes: the World Health Organisation estimates that 3.8 million men and 3.4 million women around the world die from it each year. Despite recent improvements, the mortality rate in the UK remains amongst the highest in the world and coronary prevention is a priority (Dalsgaard E *et al.*, 2014).

In recent years, gender issues have received increasing attention in international health policy. For example, the recognition that medical research was largely based on the experiences of young white men led to initiatives to make research more gender sensitive in the United States, Canada, Australia and South Africa. It is therefore important that those caring for patients with CHD have an understanding of the gendered nature of health and illness (Usman Y *et al.*, 2019).

Even though women have a higher frequency of chest pain/angina than men, the incidence of obstructive CAD in the female population is lower when compared with men with similar symptoms. In addition, it would appear that young women with obstructive CAD have a worse prognosis after Acute Myocardial Infarction (AMI), whereas older women in similar circumstances often present with larger number of comorbidities that adversely influence the outcome, when compared to men. Women with Acute Coronary Syndromes (ACS) are also less likely to receive rapid effective diagnosis and treatment than are men (Ni L *et al.*, 2016).

One of the preventions of CHD that can be done is by early detection of the risk of CHD events. The Framingham Risk Score is a rating system that is often used to predict the incidence of cardiovascular disease in the next ten years (Soo J *et al.*, 2018). This tool is recommended by the National Cholesterol Education Program (Adult Treatment Panel III) and has been validated by several studies.4 Framingham risk scores were assessed based on CHD risk factors, namely age, sex, total cholesterol and HDL levels, systolic blood pressure, smoking status, and treatment of hypertension (Emdin *et al.*, 2016).

Furthermore, extant studies have been unable to adequately examine whether a dose-response association exists between distress and mortality. The increased mortality associated with mental illness that is sufficiently severe to need admission to a psychiatric hospital is well described. However, if the influence of psychological distress on mortality is occurring at levels lower that hitherto suggested in people who would not come to the attention of mental health practitioners this may have potentially important implications for treatment (Batelaan NM *et al.*, 2014).

OBJECTIVES

The main objective of the study is to evaluate the relationship of psychological distress and framingham score in coronary heart disease patients.

MATERIALS AND METHODS

This descriptive study was conducted in Jinnah Hospital Lahore during 2019 to 2020. The data was collected from 100 CHD patients to find the relationship between psychological distress and framingham score. Determination of the sample or research subjects were determined based on inclusion criteria, namely people who have five or more risk factors for CHD include: age, smoking, history of hypertension, history of high cholesterol, history of diabetes mellitus, excess body weight (obesity), have a history of heart disease in family, lack of exercise, less consumption of fruit and vegetables, and consumption of fatty foods. Meanwhile, the people who have a previous

history of CHD were excluded.

Measurement of stress

Psychological distress assessment was carried out using the Depression Anxiety Stress Scale (DASS-42) instrument, which includes measurements for items of anxiety, stress, and depression. There were five categories of psychological distress, namely normal psychological distress when scores 0 to 25, mild psychological distress when scores 26 to 50, moderate psychological distress when scores 51 to 75, high psychological distress when scores 76 to 100, and psychological distress very high when scores 101 to 126.

Statistical analysis

The data was collected and analysed using SPSS version 19. All the values were expressed in mean and standard deviation.

RESULTS

The data was collected from 100 CHD patients. The mean age of the study patients was 54.4 ± 10.6 years. Cigarette smoking was much more common in men than in women (32.6% vs. 0, P<0.001). The serum levels of creatinine, uric acid, and cTAS were significantly higher in men than in women (0.9 ± 0.2 vs. 0.7 ± 0.1, 7.6 ± 2.1 vs. 6.8 ± 2.3, and.0.4 ± 0.0 vs. 0.3 ± 0.1, respectively; P<0.001) (Tables 1-2).

DISCUSSION

Research conducted by Emdin *et al.* (2016) showed that individuals with anxiety disorders were associated with an increased risk of various cardiovascular diseases such as CHD and heart failure (Katharina J *et al.*, 2020).The relationship between anxiety and cardiovascular disease has the same strength as traditional risk factors, such as smoking and diabetes mellitus. There are three dimensions of anxiety that focus on heart disease, namely fear, avoidance, and attention. These three dimensions will show differences in health behaviour and health service utilization. If anxiety is represented as avoidance, anxiety will be significantly related to a higher chance of smoking behaviour and a lack of physical activity (Steptoe A *et al.*, 2013). However, if anxiety is represented as a concern for cardiovascular health, then anxiety will be significantly related to lower smoking behaviour and higher physical activity (Song Y *et al.*, 2018). Anxiety can also lead to a risk of cardiovascular disease through diet and poor sleep patterns. Anxiety can be associated with an increased inflammatory response such as white blood cell count and C-reactive protein.

The existence of these mechanisms makes individuals with high anxiety susceptible to CHD. Previous study showed that stress was associated with a higher risk of CHD.6 Significant stress can be associated with higher risk behaviours, such as low fruit and vegetable intake, daily

Table 1: Clinical and laboratory characteristics of Respondents Based on Psychological Distress Level and Framingham Score

	All patients		
	Control	**CVD**	**P-value**
Age, years	49.20 ± 10.70	56.95 ± 9.53	<0.001
BMI, kg/m2	27.36 ± 4.55	28.04 ± 4.25	0.237
Hypertension	27 (30.7)	78 (44.8)	0.027
Diabetes	4 (4.5)	36 (20.7)	0.001
Hyperlipidemia	39 (44.3)	117 (67.2)	<0.001
FH of CAD	8 (9.1)	25 (14.4)	0.223
FBS, mg/dL	102.93 ± 36.77	119.23 ± 43.39	0.002
Gensini score	0	28.5 (8 to 59)	<0.001
LVEF, %	54.30 ± 5.90	50.79 ± 9.28	0.002
cTAS, mmol/L	0.37 ± 0.89	0.39 ± 0.93	0.05

Table 2: Characteristics of Respondents Based on Anxiety, Stress, and Depression

Emotions	I Do Not Feel It 0 N (%)	Lightly 1 N (%)	Moderately 2 N (%)	Quite Intensely 3 N (%)	Intensely 4 N (%)	Mean (SD)
Stress	59 (16.6)	146 (41.0)	85 (23.9)	51 (14.3)	15 (4.2)	1.49 (1.06)
Anxiety	58 (16.3)	133 (37.4)	84 (23.6)	59 (16.6)	22 (6.2)	1.59 (1.13)
Concern	12 (3.4)	94 (26.4)	106 (29.8)	87 (24.4)	57 (16.0)	2.23 (1.11)
Depression	90 (25.3)	70 (19.7)	85 (23.9)	66 (18.5)	45 (12.6)	1.74 (1.35)
Anger	157 (44.1)	83 (23.3)	43 (12.1)	40 (11.2)	33 (9.3)	1.18 (1.35)

smoking, and inactive physical activity. Individuals with high stress are prone to endothelial dysfunction and atherosclerotic plaque formation. Stressful conditions are also associated with an increase in Body Mass Index (BMI), inflammatory responses such as C-reactive protein and IL-6, cortisol levels, and central fat (Sin NL *et al.*, 2016).

CONCLUSION

It is concluded that positive relationship between psychological distresses with the Framingham score is found, but it is not significant.

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