

Depression and Conventional Risk Factors of Coronary Artery Disease

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ABSTRACT

Aim: To compare the conventional risk factors of coronary artery disease in depressed versus non-depressed groups.

Study Design: Cross sectional, comparative study

Place and duration of study: Department of Cardiology, Lady Reading Hospital, Peshawar from 1st October 2018 to 31st October 2019

Methodology: One thousand and twenty eight patients of age 18 years and above and both genders were enrolled. They were divided into group A (depressed) having 634 patients and group B (non-depressed group) 394 patients. Both groups were assessed for the presence of modifiable cardiovascular risk factors.

Results: There were 368 (61.5%) males and 266 (38.5%) were females with mean age was 55.88±11.37 years. In depressed group, 557 (87.8%) patients were living in sedentary life style while in non-depressed group, 327(82.9%) patients were living sedentary life style (p<0.05). Hypertension was present in 69.5% patients in depressed group and 60.1% in non-depressed group (P=0.005). Diabetes (36.7% vs 35.5% P=0.79), smoking (17.5 vs 20.5 P=0.19 and hypercholesterolemia (202.76±58.12 vs 196.51±52.4, P=0.311) were present in depressed versus non depressed patients respectively.

Conclusion: Cardiovascular risk factors including hypertension, physical inactivity and obesity are more common in patients with depression as compared to non-depressed patients while smoking, diabetes and cholesterol are not different between depressed and non-depressed patients

Keywords: Coronary artery disease (CAD), Depression, Risk factors

INTRODUCTION

Depression is a disease of mind in which patients thinking and behavior is negatively affected. Globally, the prevalence of this disease in adult population is 6.7% yearly. Life time prevalence of depression is 16.6%.¹ Depression is common among patient with coronary artery disease and have prognostic value in these patients. After Myocardial infarction, 15to 22% patients develop mild to moderate or some time severe depression.² WHO estimated that depression and cardiovascular diseases (CVD) will be among the major causes of disability in future.³ Depression is present in 17.2% to 45.0% of CAD patients.⁴

Cardiovascular disease remains the leading cause of death.⁵Due to socioeconomic development and cultural transition, especially in many developed countries, population have changed their life style that led to increase in CVD.⁶ Modifiable risks factors for CVD are high blood pressure, diabetes, dyslipidemia, obesity, physical inactivity, smoking and depression.⁷ Currently, global prevalence of hypertension is 26% and is projected to increase to 29% by 2025.⁸ Hypertension is the major risk factor for coronary artery diseases and cerebrovascular diseases, the two leading causes of death throughout the world.⁹ Diabetics are twofold more at risk of CVD as compared to non-diabetic.¹⁰ More diabetics dies of CVD

than any other cause.¹¹ Cholesterol level including LDL and triglyceride is directly related with the risk of CAD while HDL is protective for it. Lowering total and LDL cholesterol levels significantly reduced CAD.¹² Cholesterol level is affected by age, sex, hereditary and diet.¹³ Smoking kills about 7 million people because of direct use of smoking and around 1.2 million people dies of exposure to second hand smoke. Its rates are increasing among the female and poor population.¹⁴ Smoking cessation has shown a significant impact in reducing risk of CAD upto 36%. Physical inactivity is a key determinant to obesity, CVD and diabetes.¹⁵ It leads to overweight and obesity.¹⁶ Obesity is a known independent risk factor for many medical conditions, including cardiovascular, renal and mental health problems.¹⁷Increasing the physical activity decreases the risk of chronic disease such as CAD, stroke, and also some cancers like colorectal and lower overall mortality from CVD.¹⁸

Frequency of depressive symptoms is three times higher in hypertensive patients.¹⁹Depressed persons are more likely to smoke as compared to non-smokers and there is a positive association between depression and smoking behavior.²⁰ Depression impairs physical activity levels among different individuals and physical activity reduces depression and its symptoms.^{21,22} This leads to tendency towards obesity among depressed patients.²³ Diabetics patients who are depressed have seven times higher risk of functional disability.²⁴

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Despite the high prevalence of depression and its impact on various factors of CVD, it has not been recognized by health care providers.^{25,26}

The aim of the study is to know the major frequency of cardiac risk factors in depressed versus non depressed patients in our own population.

MATERIALS AND METHODS

It was across sectional, comparative study was conducted at Department of Cardiology, Lady Reading Hospital Peshawar from 1st October 2018 to 31st October 2019. Patients presenting to cardiology department were evaluated for enrolled. Both gender and age 18 years or above coming to cardiology OPD for any issue were included. Patients with dyspnea, continuous or recurrent chest pain and patients with hemodynamic instability were excluded. PHQ9 was used as a scale for diagnose of depression. Patients having depression on PHQ-9 scale were categorized into group A as depressed group while those not having depression were categorized into group B as non-depressed. History and clinical examination was performed to determine the presence of different risk factors. Blood pressure checked. Weight and height determined and body mass index calculated. Investigations such as blood sugar, HbA1c and Lipid profile performed on all enrolled patients. Both groups were then compared for the frequency of cardiovascular risk factors.

The data analysis was analyzed through SPSS-20. Chi square test was used to compare categorical variables and numerical variables were compared by using independent student's T test. P value less than 0.05 was considered significant.

RESULTS

There were 368 (61.5%) males and 266(38.5%) were females with mean age was 55.88±11.37 years. Among the depressed group, 380(54.9%) patients were from urban area and 257(40.3%) from rural area while in non-depressed group 226(57.8%) patients were from urban patients were and 165(42.19%) from rural area (P=0.55). Obesity and physical activity were significantly higher in patients with depression.

Table1: Risk factors comparison between depressed and non-depressed groups

Risk Factors	Depressed group	Non-depressed group	P value
Hypertension	441(69.5%)	237(60.1%)	0.005
Diabetes	233(36.7%)	140(35.5%)	0.79
Smoking	111(17.5%)	81(20.5%)	0.193
Physical Inactivity	557(87.8%)	327(82.9%)	0.053
Hypercholesterolemia (mg %)	202.76±58.12	196.51±52.4	0.311
BMI level	27.7±5.2	27.1±4.8	0.071

In depressed group, 557 (87.8%) patients were living in sedentary life style while in non-depressed patients 327(82.9%) patients were living sedentary life style (P=0.05). Diabetes, smoking and hypercholesterolemia were statistically not significant among depressed versus non depressed patients. However, there was a trend of higher level of these risk factors in depressed group as compared to non-depressed group (Table 1). Cholesterol

level, triglyceride, LDL and HDL were compared between depressed and non-depressed group. The difference was not statistically significant (Table 2).

Table: 2: Comparison of different cholesterol level among depressed and non-depressed patients

Type of cholesterol	Depressed	Non-depressed	P value
Cholesterol (mg %)	202±58.12	196±52.49	0.3
LDL (mg %)	116.3±143.2	114.5±35.7	0.9
Triglycerides (mg %)	172.6±71.0	171.3±60.66	0.88
HDL (mg %)	35.6±9.5	40.6±8.3	0.12
Blood glucose mg %	170.38±90.83	162.95±87.52	0.32
HbA1C	9.3±4.4	8.9±2.2	0.81

DISCUSSION

This study observed that obesity and physical activity was significantly higher in depressed group. Diabetes, smoking and hypercholesterolemia were statistically not significant among depressed versus non depressed groups. Different cholesterol and triglyceride were also not statistically significant. Our study gives diverse results with some risk factors significantly different between depressed and non-depressed group while other not. Hypertension is significantly higher in depressed patients in this study. These findings are in accordance with international studies findings. Rabkin et al¹⁹ reported that hypertension was three times highly prevalent in depressive individuals. They justified this correlation by the effect of depression on pathophysiology of Hypertension. Hypertension was linearly associated with depression in our study. Higher frequency of hypertension was noted among those severely depressed. According to Jokisalo et al²⁷ that compliance with drugs and anxiety in response to blood pressure values were associated with poor control of blood pressure. Since pathophysiology is interrelated in depression and hypertension, possibility of depression in hypertensive patients and vice versa is reasonable.²⁸

There is a bidirectional association between depression and physical activity, that is, physical activity reduces depression and its symptoms, while depression impairs physical activity levels among different individuals.²¹ One study showed that light activity was consistently associated with reduction in depressive symptoms in adults.²² The present study shows that depressed have less physical activity and adopt sedentary life style as compared to the non-depressed patients. A cohort study by Kivimäki et al²³ reported that there is a positive association between depression and obesity and psychological issues was associated with increased risk of obesity and the risk of obesity with increased episodes of depression. Another study also found that the greater the individual's psychological distress or depression were more likely to become obese.²⁴⁻²⁵ This study showed positive relationship between depression and obesity, that is depressed patients were more obese than the non-depressed patients as depression leads to overeating or lack of eating. By reducing weight in obese patients will help relive depression. Similarly, managing depression can reduce weight in obese patients²⁶.

In our study, smoking is not significantly different between depressed or non-depressed patients. However, De Witt et al²⁹ established a positive association between depression and smoking behavior and found that

depressed persons are more likely to smoke as compared to non-smokers. This difference between our findings and this study could be explained by the fact that smoking is not very common in our part of the world. According to one study, smoking frequency is same but quitting smoking behavior in depressed patients is difficult as compared to non-depressed. Depressive adults who smoke believes that smoking relieve negative effect also many reported the reward from smoking^{30,31}.

Cholesterol and its different types and diabetes were not statistically different between depress and non-depressed patients in our study. One explanation for this finding is that possibly depression effect behavior towards smoking and exercise. However, it does not affect the biochemical status of the body. Therefore blood glucose and cholesterol level were not affected by the depression. However, the vice versa is true as diabetes can lead to depression as reported by many studies. Depression is twice as common in diabetics as compared to non-diabetics³². Functional disability in depressed diabetics is two times higher than those diabetics who do not have depression.³³

The present study highlighted the presence of some modifiable risk factors of CVD among depressed individuals. These risk factors can be controlled or prevented by promoting life-style interventions .It is necessary to increase awareness among health care providers and in general population to learn how to monitor and manage these risk factors in different sections of society.

CONCLUSION

Cardiovascular risk factors including hypertension, physical inactivity and obesity are more common in patients with depression as compared to non-depressed patients while smoking, diabetes and cholesterol are not different between depressed and non-depressed patients.

Conflict of interest: Nil

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