

**EVALUATION OF COMORBID DEPRESSION IN POST-CORONARY ARTERY
BYPASS GRAFT SURGERY PATIENTS BY HAMILTON DEPRESSION RATING SCALE
(HDRS) AND TREATMENT RESPONSE TO SERTRALINE**

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ABSTRACT

Coronary artery disease (CAD) is one of the leading causes of mortality in developing countries, and it is linked to poor quality of life, disability, and early death. In India, Coronary artery bypass graft surgery (CABG) is the most used surgical treatment for CAD. This technique relies on revascularization, which involves increasing the blood supply to the heart muscle by redirecting blood flow to other arteries. CABG may have a negative impact on the patient's health, leading to cognitive decline, with depression being the most prevalent symptom. The aim of this study is to screen for presence of depression in patients undergoing CABG by rating the symptoms on the Hamilton Depression Rating Scale (HDRS) before and after initiation of treatment by Sertraline. The goal of this research is to identify early signs of depression after CABG in the Indian setting in order to encourage quick intervention for a better result.

KEYWORDS: coronary artery disease, CABG, depression, HDRS, sertraline.

INTRODUCTION

In 2016, the prevalence of cardiovascular diseases (CVD) in India was estimated to be 54.5 million responsible for One in every 4 deaths.^[1] CVD's frequently strike people during their most productive years of life, with devastating social and economic repercussions.

Coronary artery bypass grafting (CABG) is a major surgical procedure where harvested venous or arterial conduits are used to bypass atheromatous obstructions in a patient's coronary arteries. The bypass restores blood flow to the ischemic myocardium which, in turn, restores function, viability, and relieves anginal symptoms. Almost 4,00,000 CABG surgeries are performed each year in India making it the most commonly performed major surgical procedure.^[2] There has been a steady 25-30% annual increase in the number of coronary procedures performed over the past several years.^[3]

According to estimates, at least 25% of patients will eventually experience a decline in quality of life following a CABG; it even doubles the risk of subsequent cardiac events and death following surgery that are associated with high levels of anxiety and depression.^[4]

According to the International Classification for Diseases-eleventh edition (ICD-11), depression is characterized by low mood and/or anhedonia (loss of interest in activities that once were pleasurable) that lasts for two weeks or more and is accompanied by significant functional impairment and somatic complaints of disturbed sleep, fatigue, body aches, digestive or sexual problems, and negative thoughts.

Additionally, the factors affecting recovery which include extended hospital stay, pain and infection, puts the patient at increased risk for developing depressive symptoms. This can pose a diagnostic challenge since symptoms of lack of appetite, irregular sleep patterns, and persistent exhaustion may coexist with those caused by surgery.

Other factors influencing the relationship between depression and CABG, includes biological alterations such as cardiac rhythm alterations, tone of cardiac muscle, hormone levels, and reduced brain perfusion.^[5]

Selective serotonin reuptake inhibitors (SSRIs) class of antidepressants have been shown to inhibit platelet function, promote endothelial stabilization, and possess anti-inflammatory properties.^[9-17] These pharmacologic properties have led to the hypothesis that SSRIs may be

associated with cardiovascular benefits beyond their antidepressant effects. They have been shown to improve depression scores without adverse cardiovascular effects in several studies conducted in patients with acute myocardial infarction, unstable angina, or stable coronary artery disease.^[18,19]

The purpose of this study is to screen for depression in patients Post CABG using 17-item Hamilton Depression [HAM-D] score, to initiate antidepressant management with sertraline (in flexible dosages of 50 to 200 mg/d) and evaluate for remission of depressive symptoms.

MATERIALS AND METHODS

Type of study- Observational

Duration of study- 6 months

Sample size- 50

Ethics committee approval and informed consent was taken prior to start of study

Inclusion criteria-

- men and women aged over 18;
- no psychiatric pathology or illness;
- patients in hospital care post CABG surgery

Exclusion criteria-

- paediatric population;
- a different type of cardiac surgery that was not exclusively CABG
- patients with an active treatment deriving from a psychiatric disorder;

RESULT AND DISCUSSION

About 50 patients of post CABG status were screened for the presence of depression using the Hamilton Depression Rating Scale. Out of which 39 (78%) patients screened positive for Depression who were subsequently classified into varying severities of Depression based on symptom presentation. 26% (n=13) fall under Mild, 34% (n=17) under Mild to Moderate and 18% (n=9) under Moderate to Severe depression. (Figure 3).

The mean age of the screened patients was 62 +/- 8.42. The males (n=26;66.6%) were more in number as compared to the females (n=13;33.3%) with majority of the patients having no employment at the time of evaluation (n=25 ;64.1%). A minor fraction of the patients were aged above 60 years (n=7;18%) (Figure 1 and 2).

There was a positive correlation observed between increased age and presence of depressive features. Most common symptom presentation on evaluation of depression identified during the screening period is displayed in Figure 4.

Patients were started on Sertraline and were followed up meticulously for a period of 6 weeks after which HDRS scores were reassessed and a reduction in those scores were seen as displayed in Figure 3. About 53.85%

(n=21) of patients after 6 weeks of initiation of sertraline showed clinical remission as per HDRS scores, once the patient was assigned to sertraline. A small proportion of patients (n=5;12.8%) started on sertraline showed no drop in these scores.

DISCUSSION

It is important to comprehend how CABG affects depressive symptoms given the substantial comorbidity between coronary artery disease (CAD) and these symptoms. One of the main contributors to poorer health is depression, which has a negative impact on a patient's quality of life as well as their social and familial lives. Postoperative depression is also associated with complicated recovery and poor postoperative outcomes after CABG.

However, in many cases, the high prevalence of mood disorders cannot be explained by the severity of the illness, but is instead related to psychosocial factors, such as socioeconomic status, lifestyle (adherence to the recommended diet or prescribed treatment), or the level of social support.^[20]

Hypothalamic-pituitary-adrenal axis (HPA) axis, increased inflammatory factors like platelet factor 4, fibrinogen, and C-reactive protein, as well as hypercortisolaemia, insulin resistance, and dysregulation of sympathetic-parasympathetic tone have all been linked to depression in patients with cardiac diseases. The onset and course of depression may also be influenced directly or indirectly by bad lifestyle choices including smoking, consuming excessive amounts of alcohol, not exercising, poor medication adherence, and unhealthy diet.^[6,7,8]

This is why assessing how a CABG may impact a patient's mental, psychological, and social abilities—and, especially, analysing the degree of depression—requires the use of several tests that have been clinically validated.^[5]

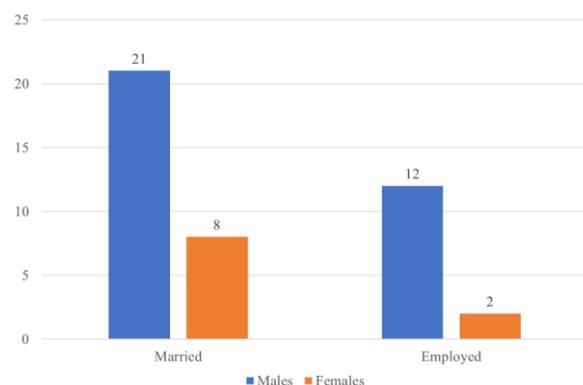


Figure 1: Sex-wise distribution of sociodemographic data.

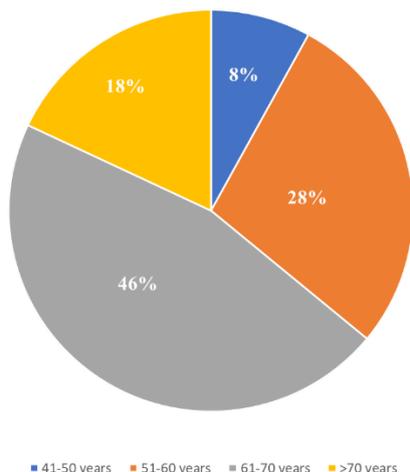
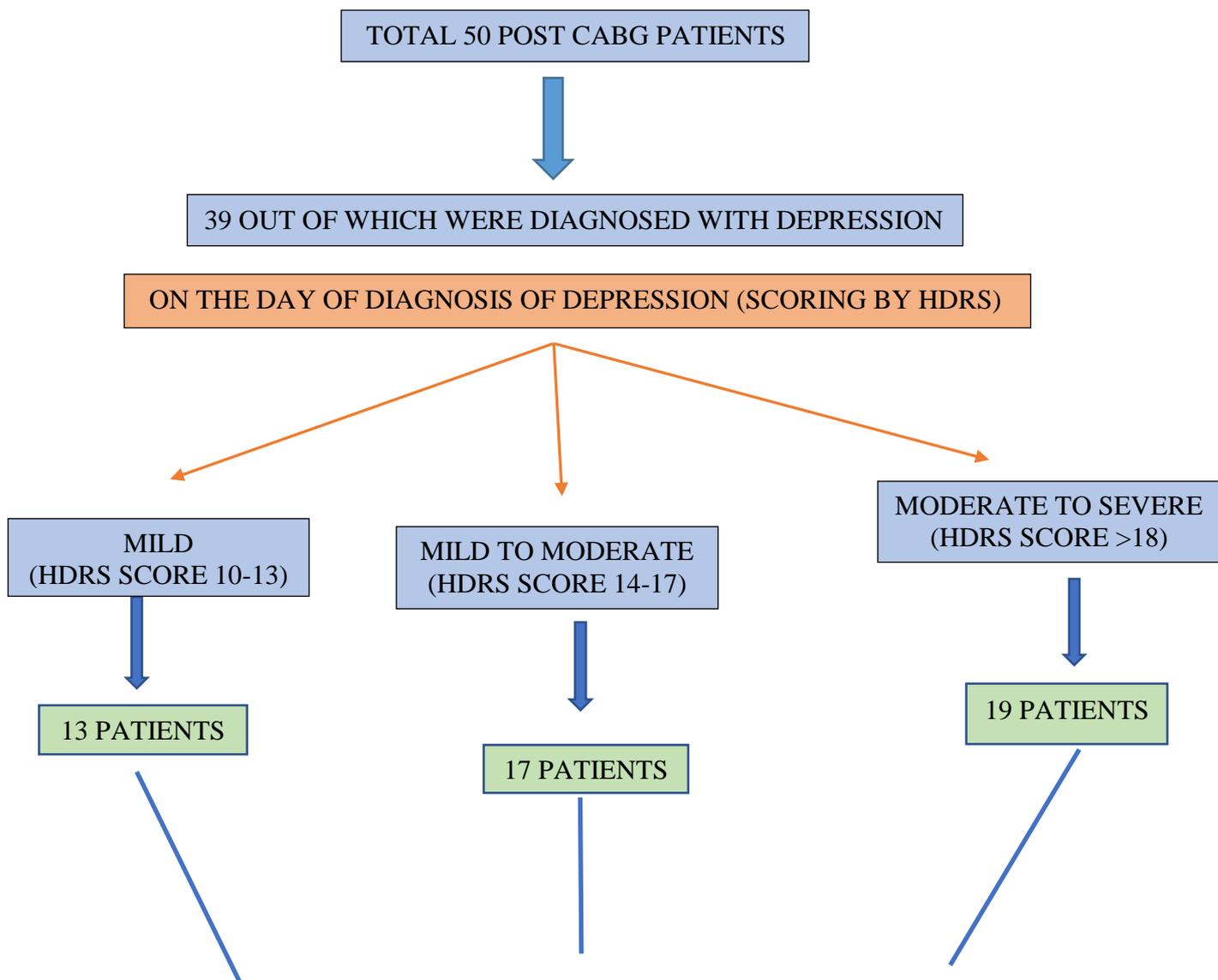


Figure 2: Percentage-wise distribution by of the screened patients by age.



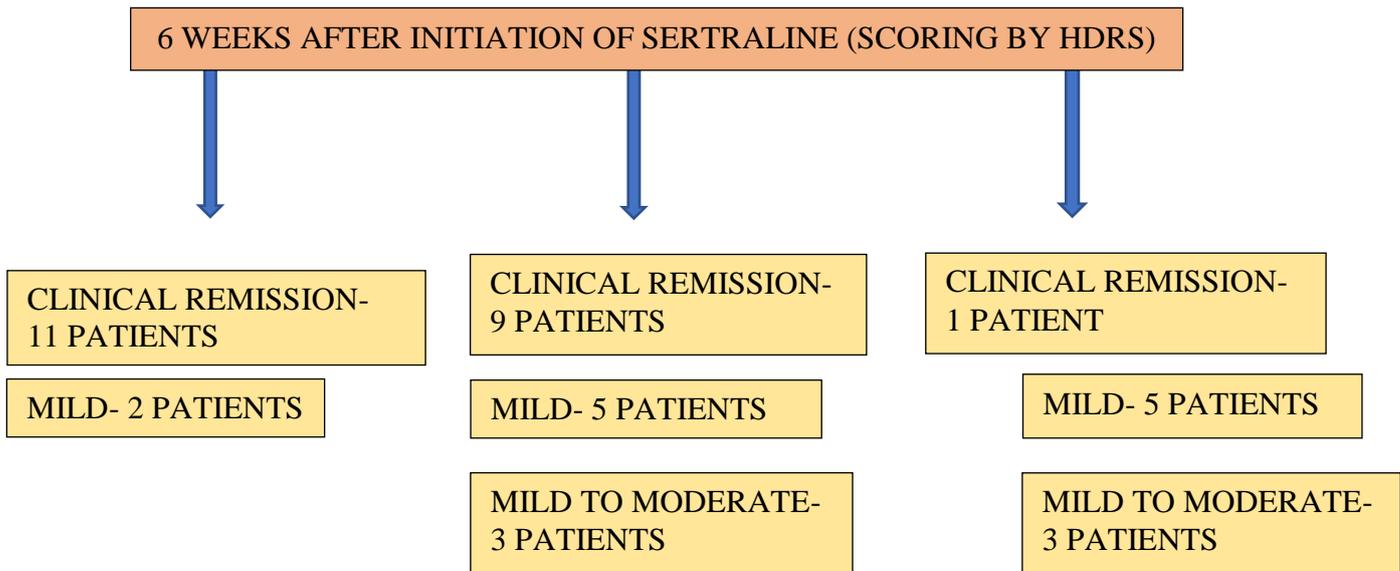


Figure 3

MILD	MILD TO MODERATE	MODERATE TO SEVERE
Majority Symptom Presentation		
Depressed Mood	Depressed Mood	Feelings of Guilt
Insomnia- Early in the night	Insomnia- Throughout the night	Passive Death Wishes
General Somatic Complaints	Loss of Interest	Insomnia
		Retardation
		Somatic Symptoms

Figure 4: Most common symptoms elicited in each category of Depression.

CONCLUSION

The behavioural and physiological mechanisms, such as, smoking, alcohol use, diet, compliance to medication, exercise regime, along with inflammatory processes, are possible explanations warranting further research in CABG surgery cohorts.

The present study observed that about 78% of post-CABG surgery patients experience depressive symptoms.

Given the prevalence of depression and its impact, early detection is crucial, since it enables the identification of at-risk patients, through a clinical interview that uses validated measurement tools. This enables the medical team to implement preventive strategies as well as monitor the development of the depression.

Our results suggest that sertraline is a safe and effective treatment for recurrent depression in patients with recent

MI or unstable angina and without other life-threatening medical conditions.

Accurate diagnosis and intervention among CABG surgery patients may impact upon distress levels and clinicians are encouraged to establish referral and treatment pathways for their own CAD patients.

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