



Assessment and prevalence of depression among cardiovascular disease patients in Nilgiris District observational cross-sectional study

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ABSTRACT

Depression deter mental catabolic effect over the time, symptomatically affects quality of life which leads to worse health outcomes that linked to higher mortality and morbidity rates with huge impact on public health. Chronic conditions like Cardio Vascular Diseases (CVDs) deteriorates patient health with cognitive impairment that progresses to somatic dysfunction, which can exacerbate to the occurrence and development of depression with the increased risk of inducing Chronic Diseases. Depression are often neglected, overlooked and remains unrecognized and undertreated in the patient, especially in CVDs patient are considered as normal that instances to poor prognosis. The association of depression and CVDs are not incidental, but the lack of diagnosis for the coexistence of these co-morbid condition and poor treatment hindrance the disease outcome. Depression emerges an alarming cardio vascular risk factor which is associated with higher cost of care for the patient as well as burden to the healthcare system. Prior detection and identification with rational intervention of depression at CVDs will help to change the scenario by improving the standard of health and overall quality of life of patient. Here, in this study we assess the prevalence of depression at cardio vascular disease patient in Nilgiris population.

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INTRODUCTION

Depression is the most common severe psychiatric disorder characterized by immense mental suffering accompanied by poor mood and loss of interest, satisfaction, self-confidence, self-respect, guilt, sleep disturbance, increased or decreased appetite,

tiredness, depreciation, and possible enjoyment in everyday activities. This disorder can manifest in all culture, regardless of age, sex and social environment.

Being the most frequent mental disorder in primary health care, WHO ranked depression as the third cause global disability and is estimated to be at first place by 2030 in concerned with public health problem worldwide. (Malhi and Mann, 2018).

CVDs are heart and circulatory system disorder which includes of stroke, coronary heart disease, congestive heart failure, cerebrovascular disease, peripheral arterial disease, rheumatic heart disease, congenital heart disease, deep vein thrombosis and pulmonary embolism.

As per World Health Organization in 2017 CVDs are the number one cause of death globally with an estimation of 17.9 million people died from CVDs in

2016.

Depression a common disorder that are often co exist with a prevalence of 20% to 30% in CVDs patients. (Bradley and Rumsfeld, 2015)

Patient are advised to modify lifestyle, habits and their activities after CVDs which can be the contributing factors for developing depression or worsening the pre-exists depressive condition.

The process for developing CVDs in depressed patient includes prolonged activation of hypothalamic pituitary adrenal (HPA) axis that leads to the increase of cortisol with increasing the concentration of cholesterol, glucose, free fatty acid and thereby increasing the Blood Pressure. (Zhang et al., 2018)

The guidelines on cardiovascular disease prevention in clinical practice of European Society of Cardiology recommend the assessment of psychosocial parameters to intervene CV risk factors. (Piepoli et al., 2017)

Depressive patient is more prone to advance the CVDs condition and CVDs patients are at increased risk for the development of depression. The depressive condition co exist with increased CVDs risk and contributes increased mortality in CVDs patient.

MATERIALS AND METHODS

We conducted an observational cross-sectional prospective study for Cardiovascular Disease patient. The study was carried out in 420 bedded hospital which provides secondary health care for population of Nilgiris district, Tamil Nadu. It is a pilot study for a duration of 6 months with 100 samples. Male and female patient above 18 years of age with confirmed diagnosis of cardiovascular disease were included. Patient with any other chronic illness during the study period that might lead to depression i.e., Diabetes, COPD, CKD, Cancer etc. were excluded. The Institutional Ethical Committee approval was obtained from Institutional Ethics Committee, JSS College of Pharmacy, Rocklands, Ooty before the initiation of the study (Reference no: JSSCP/DPP/IRB/09/2017-18, Dated: 03.02.2018)

The interested patient were explained about Informed Consent and their consent was taken before including them in the study. The patients social, demographic & disease related data were collected and entered into Data Collection Form.

The data was collected prospectively as a single encounter from each patient from their respective medical records who attended the outpatient unit and who were admitted in the inpatient unit of District Government Headquarters Hospital, Ooty with

concomitant diagnosis of a cardiovascular disease and HAM-D depression score was noted. The data was analysed using Study Package for Social Science (SPSS) software.

RESULTS AND DISCUSSION

The study was carried out on 100 patients after certain screening. The study patient was classified according age, gender, social habits, food habits, education diagnosis, duration of disease, co morbidity, patient type, HAM-D scores interpretation as shown in the Table 1. Among 100 recruited patients, 26 patients were found to be normal after assessing the HAM-D score. So the further analysis is performed at the remaining 74 patients who were depressive.

The study population were divided into various age groups such as 31-40 years 4.054% (3), 41-50 years 10.81% (8), 51-60 years 32.43% (24), 61-70 years 40.54% (30), 71-80 years 8.1% (6) and 81-90 years 4.05% (3). Among the study population 52.7% (39) were female and 47.29% (35) male.

8.1% (6) were illiterate, 68.91% (51) completed primary education, 18.91% (14) completed secondary education and 4.05% (3) had done higher education. Vegetarian were 14.86% (11) and non-vegetarian 85.13% (63). Smoker 13.51% (10), smoker and alcoholic 36.48% (27) and non-smoker and non-alcoholic were 50% (37).

Among the 74 depressive patients, 5.4% (4) were found to be having ACS, 18.91% (14) CAD, 35.13% (26) Hypertension, 28.37% (21) MI, 2.7% (2) LVH and 9.45% (7) IHD patient. As shown at Figure 1, the mean HAM-D scores were found to be 15.50 ± 2.02 in patients with ACS, 15.64 ± 0.87 in patients with CAD, 12.69 ± 0.64 in patients with Hypertension, 14.52 ± 0.95 in patients with MI, 9.5 ± 0.50 in patients with LVH and 11.86 ± 1.03 in patients with IHD. When Kruskal-Wallis Test (Nonparametric ANOVA) was done ($P=0.0349$, which was considered to be significant).

50% of patient were inpatient (IP) and 50% patient were outpatient (OP). The mean HAM-D scores obtained in both IP and OP patient type were found to be 14.86 ± 0.64 and 12.65 ± 0.55 as shown at Figure 2. When Two-Tailed unpaired t-test was performed, ($P=0.0106$ which was considered to be significant).

The duration of disease below 5 years comprised of 62.16% (46), 5-10 years of 29.72% (22) and above 11 years of 8.1% (Cohen et al., 2015).

In this study, the prevalence of depression and CVDs has been examined. There was association of depression with the cardiovascular disease. The

Table 1: General characteristics of cardiovascular disease patients

| Description of variables (N=100) | | % |
|----------------------------------|------------------------------|------|
| Age | 31-40 | 8.0 |
| | 41-50 | 13.0 |
| | 51-60 | 34.0 |
| | 61-70 | 36.0 |
| | 71-80 | 6.0 |
| | 81-90 | 3.0 |
| Gender | Female | 51.0 |
| | Male | 49.0 |
| Social Habits | Only Smoker | 15.0 |
| | Smoker & Alcoholic | 32.0 |
| | None | 53.0 |
| Food Habits | Vegetarian | 19.0 |
| | Non Vegetarian | 81.0 |
| Education | Illiterate | 19.0 |
| | Primary | 61.0 |
| | Secondary | 16.0 |
| | Higher Studies | 4.0 |
| Diagnosis | Hypertension | 45.0 |
| | Other Cardiovascular Disease | 55.0 |
| Duration of Disease | Below 5 years | 54.0 |
| | 5-10 years | 36.0 |
| | 11 years & above | 10.0 |
| Comorbidity | Gastritis | 3.0 |
| | Common Cold | 3.0 |
| | Osteoarthritis | 2.0 |
| | Myalgia | 8.0 |
| | Urinary Tract Infection | 1.0 |
| | Respiratory Tract Infection | 5.0 |
| | Ascites | 1.0 |
| | None | 77.0 |
| Patient Type | In-Patient | 43.0 |
| | Out-Patient | 57.0 |
| HAM-D | Normal | 26.0 |
| | Mild | 39.0 |
| | Moderate | 27.0 |
| | Severe | 8.0 |

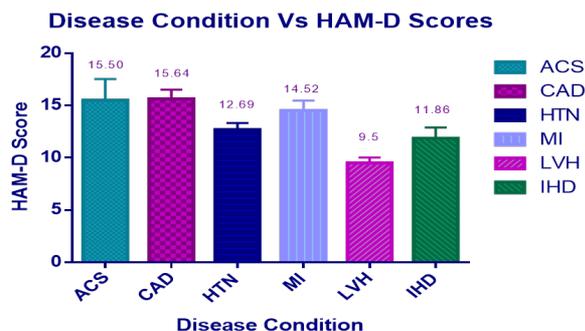


Figure 1: Effect of disease condition on HAM-D scores in cardiovascular patients

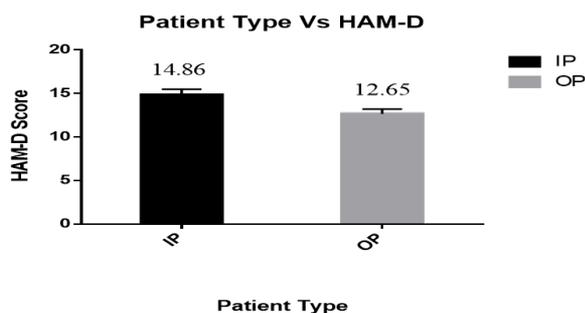


Figure 2: Effect of patient type on HAM-D scores in cardiovascular patients

prevalence of depression are high among the CVDs patients (Cohen *et al.*, 2015) (Hare *et al.*, 2014). As per our survey only few studies has been conducted in India to check the prevalence of depression at cardiovascular disease.

Among 74 included participant 8.1% (Cohen *et al.*, 2015) were illiterate, primary education 68.91% (51), having secondary education 18.91% (14) and 4.05% (3) had higher education. Majority of study population belongs to low socio-economic status working as cooly with low educational qualification. The possible reason for association of depression with chronic diseases could be

Of psychological impacts due to social inequalities, public stigma and financially handicapped. Some of the study concluded that low socioeconomic status during the life course are associated with depression. (Osler *et al.*, 2015)

We have also noted the prevalence of depression was more with the IP compared to OP. Inpatients are often seems to be more depressive than the outpatients (Luppino *et al.*, 2014). Cost of hospitalization (Zaprutko *et al.*, 2018) and impact of the chronic condition could be the major reason that triggers depression among the study population.

CONCLUSION

Even with the patient receiving CVDs treatment, the assessment for depression should be done and if required, depending on the level of depression, counselling and psychotherapy (eg. Cognitive behavioral therapy) are recommended to avoid cardiac morbidity and mortality.

The patient admitted in hospital with various cardiovascular disease were found to have more depression as compared to the outpatient, so it may be said that the CVD inpatient are at more risk of developing depression.

However further research is required in larger population to endure the influence of other confounding factors so as to reach a definite conclusion.

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