

## Depression in chronic heart failure

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### Abstract

Depression is common in patients with chronic heart failure. The current study attempts to study the prevalence of depression in chronic heart failure patients with normal cognitive abilities, using standard scales and structured psychiatric interview schedule. The sample consists of 100 in patients with chronic heart failure of more than one year duration. A diagnosis was established using Framingham's criteria for heart failure and severity was assessed using the New York Heart Association functional class. Subjects were assessed using Montgomery Asberg's Depression Rating Scale (MADRS) Depressive symptoms. Descriptive Statistics, Chi square tests were used for data analysis. Common Depressive symptoms were lassitude, concentration difficulty, inner tension, reduced appetite and reduced sleep on MADRS. Screening instruments are useful but a structured interview diagnostic clinical interview is essential to confirm the diagnosis before treatment intervention.

**Keywords:** chronic heart failure, depression, MADRS

### Introduction

Chronic heart failure (CHF) is a complex clinical syndrome characterized by abnormalities of right or left ventricular function and changes in neurohumoral regulation, accompanied by effort intolerance, fluid retention and decreased survival [1]. Heart failure has a complex therapeutic regime of multiple medications, dietary restrictions, and vigilant symptom monitoring to maintain an acceptable quality of life. Overall prevalence of CHF is 2% in adult population. It increases to 6% to 10% in people above the age of 65 years [2].

Disturbances of mental function are common in patients with congestive heart failure. Patients may not take their medications correctly, refuse or forget to exercise or follow a restricted diet, cancel appointments, or pursue unhealthy lifestyle activities or behaviours. Lack of adherence can lead to both patient and health care provider frustration and lead to exacerbation of the condition or misdiagnosis. Hence there is a need to attain accuracy in screening and diagnosing psychiatric conditions co morbid with a chronic cardiac failure in order to improve treatment adherence and outcome.

### Literature Review

By 2005, the total number of cardiovascular disease deaths had increased globally to 17.5 million. Rates of death attributable to cardiovascular disease (CVD) have declined, yet the burden of disease remains high. Based on 2009 data, the overall rate of death attributable to CVD was 236.1 per 100,000 [3, 4].

Marked increases in both CHD prevalence and risk factor are observed in urban India compared with rural settings. A recent overview of prevalence surveys conducted over 2

decades in India reported a 9-fold increase of CHD in urban centres, compared with a 2-fold increase in CHD rates among rural populations [5]. Major depression was the most common mental disorder (9%); the rate was higher in women than men.

### Aim and objectives of the study

To understand the phenomenology of depression on MADRS.

**Methodology:** Purposive Sampling was used to select 100 clinically stable in patients with diagnosis of chronic heart failure. The clinical sample was selected from patients admitted for investigation and treatment of chronic heart failure at the Department of Cardiology, St. John's Medical College Hospital. They were administered the semi structured proforma and the MADRS scale.

### Inclusion Criteria

Patients diagnosed with congestive cardiac failure

Age above 18 years

In Patients who are stable clinically

Patients who provide informed consent for the study

Patients who can speak, read, write and understand

Kannada, English or Hindi

### Exclusion Criteria

Clinically unstable patients

Patients with dementia and delirium (Score on the MMSE <23)

Patients who have experienced a recent (within 1 month) cerebrovascular accident and/ or seizures.

Other severe medical and surgical disorders

Readmission within the study period

Any sensorimotor difficulty that would impair testing on scales

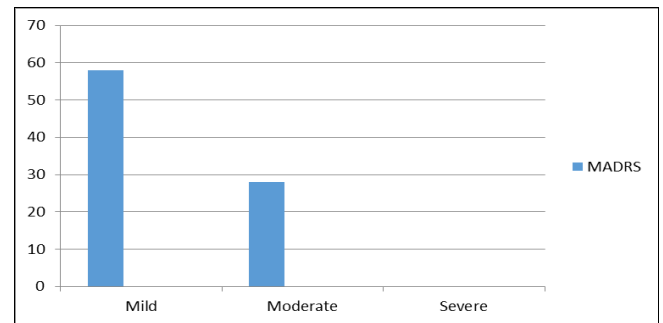
**Table 1:** Socio demographic data of the sample (N=100)

	Variable Groups	Frequency	Percent
Age group	<60	37	37
	>60	63	63
Gender	Male	68	68
Marital status	Single	8	8
	Married	71	71
	Widow	21	21
Religion	Hindu	67	67
	Muslim	8	8
	Christian	25	25
Education	Nil	18	18
	Primary School	24	24
	Middle School	17	17
	High School	21	21
	Pre-University	7	7
	Graduate/Pg	8	8
	Professional/Honors	5	5
occupation	Unemployed/Retired	51	51
	Unskilled	10	10
	Semiskilled	2	2
	Skilled	6	6
	Clerical	25	25
	Semiprofessional	4	4
	Professional	2	2
Income	<= 1600	20	20
	1601-4809	24	24
	4810-8009	23	23
	8010-12019	19	19
	12020-16019	6	6
	16020-32049	6	6
	>=32050	2	2
Socio Economic Status	Upper Middle Class	9	9
	Lower Middle Class	19	19
	Upper Lower	63	63
	Lower	9	9
Family Type	Nuclear	49	49
	Joint	42	42
	Others	9	9

53% of the subjects were between 60-79 years of age. 10% were above 80 years of age. Mean age of the sample is 62.91+/-12.48. Men constituted 68% of the sample. 71% were married and 21% were widow/widowers. 67% were Hindus. 59% of the subjects had below middle school education and 21% of the sample was educated up to high

school. 51% of the subjects were either unemployed or retired. 67% of the patients fall under the category of income of less than 8009. A majority of the sample i.e., 63% belonged to upper lower class, 9% belonged to the lower class of socioeconomic status according to Kuppuswamy's classificatory system. 49% of the sample was in the nuclear family group.

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**Fig 1:** Depressive symptoms on MADRS (N=100)

**Table 2:** Most Common depressive symptoms on MADRS. (N=100)

MADRS Items	0	1	2	3	4	5	6
Lassitude	14	15	64	3	4	0	0
Concentration Difficulty	42	9	47	2	0	0	0
Inner Tension	26	24	46	3	1	0	0
Reduced Appetite	15	17	43	12	12	0	1
Reduced Sleep	9	7	42	11	24	0	7

64% of the patient's scored 2 for item no 7 i.e., lassitude, 47% for concentration difficulties, 46% of the sample had inner tension, 43% had reduced appetite and 42% of the sample had disturbed sleep.

**Table 3:** Comparison of Socio demographic and Clinical variables with MADRS categories of depressive symptoms using chi square test. (N=100)

Variable	Variable Characteristics	MADRS			p value
		normal	mild	moderate	
Age	<60 years	4	26	7	0.158
	>60 years	10	32	21	
Gender	Male	12	38	18	0.307
	Female	2	20	10	
Marital status (n=92)	Widow	1	11	9	0.159
	Married	11	43	17	
Education	< High school	9	53	23	0.227
	>High school	5	10	5	
Occupation	Unemployed	6	28	17	0.449
	Employed	8	30	11	
Socio-economic status	Upper class	6	15	7	0.447

	Lower class	8	40	21	
Family type	Nuclear	8	27	14	
	Joint	6	26	10	0.804
Breathlessness	Present	11	55	27	0.071
	Absent	3	3	1	
Fatigue	Present	11	38	20	0.605
	Absent	3	20	8	
Co morbid Medical illness	Hypertension	11	38	24	0.125
	Diabetes	11	36	21	0.319
	hypothyroidism	0	7	4	0.349
Duration of heart failure	1-5 years	10	44	23	0.781
	>5 years	4	14	5	
NYHA	I,II	3	11	2	0.304
	III,IV	11	46	26	

Here for ease of analysis, age was categorised into <60 years and >60 years, socioeconomic status into lower class and upper class and duration of cardiac illness into below 5 years and above 5 years of illness. Socio demographic and clinical variables did not show significant associations with depressive symptoms on MADRS scale including NYHA functional class.

**Pattern of depressive symptoms on Montgomery Asberg’s Depression Rating Scale (MADRS)**

On MADRS scale 58% of the study group showed mild and 28% showed moderate depressive symptoms and 14% did not report any depressive symptoms. None had severe depressive symptoms. i.e. a score of >34 in the study population.

Most common depressive symptoms in descending order of frequency were lassitude, concentration difficulty, inner tension, reduced appetite, and reduced sleep. Sleep difficulties and poor appetite were seen in majority of the patients. Somatic symptoms seem to be predominant probably because of the nature of the population studied. As

the study is conducted in CHF patients whose prominent presenting complaint is fatigue and breathlessness, diuretics induced hypokalemia causing lassitude and sleep disturbances might have contributed to the larger proportion of patients with somatic complaints. MADRS has more items for somatic symptoms; hence higher scores on MADRS.

There was a significant association between breathlessness and depressive symptoms with a p value of 0.071. A study by Maureen<sup>6</sup> showed the patients with heart failure who had increased physical symptoms and poorer physical functioning reported increased symptoms of depression. Physical symptoms explained a greater portion of the variance in depression than did physical functioning. Thus, it appears that patients with heart failure are affected emotionally by both their physical symptoms and their limitations in their physical functioning, but depression is more strongly related to having more physical symptoms than having greater limitations in physical functioning.

No significant differences were seen between other sociodemographic and clinical variables.

**Table 4:** Comparison of Socio demographic and Clinical variables with MADRS categories of depressive symptoms using chi square test. (N=100)

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### **Pattern of depressive symptoms on Montgomery Asberg's Depression Rating Scale (MADRS)**

On MADRS scale 58% of the study group showed mild and 28% showed moderate depressive symptoms and 14% did not report any depressive symptoms. None had severe depressive symptoms. i.e. a score of >34 in the study population (Figure No.2).

Most common depressive symptoms in descending order of frequency were lassitude, concentration difficulty, inner tension, reduced appetite, and reduced sleep. Sleep difficulties and poor appetite were seen in majority of the patients (Table No.9).

Many patients reported sleep disturbances which requires further assessment. Physical problems like orthopnoea, paroxysmal nocturnal dyspnoea, nocturia or use of diuretics causing micturition would have also contributed to the sleep disturbances.

Somatic symptoms seem to be predominant probably because of the nature of the population studied. As the study is conducted in CHF patients whose prominent presenting complaint is fatigue and breathlessness, diuretics induced hypokalemia causing lassitude and sleep disturbances might have contributed to the larger proportion of patients with somatic complaints. MADRS has more items for somatic symptoms; hence higher scores on MADRS.

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No significant differences were seen between other sociodemographic and clinical variables.

### **Limitations of the study**

1. The point prevalence rate can be an overestimate of the true prevalence rate in the general population as the study was on inpatients in a tertiary hospital.
2. Majority of our study subjects were educated up to primary school level. The challenge was to make patients understand the items on the scales and respond after proper interpretation.
3. This cross-sectional approach captures only a brief moment in time and does not give as much insight as a longitudinal approach could in relation to heart failure. The progression of symptoms associated with heart failure would influence the responses.

### **Implication**

Considering the high prevalence of psychiatric co morbidities Screening CHF patients for psychiatric symptoms and disorders is essential. Early recognition and treatment not only reduces the morbidity but also improves the cardiac condition.

Most of the study subjects had subsyndromal psychiatric symptoms i.e. They need follow up, reassessment and interventions

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