

**Original article:**

## **Study of clinical Profile and outcome of Acute De-compensated Heart Failure in elderly population at tertiary care hospital**

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### **Abstract:**

**Introduction:** Heart failure (HF) is a major public health problem having a prevalence of over 5.8 million in the USA, and over 23 million worldwide. With aging population, heart failure in elderly people increasing in India also similar to western population.

**Material and methods:** All elderly patients admitted in emergency, medicine wards and CCU having symptoms of heart failure were first screened. A detailed history was recorded in addition to a thorough clinical examination, and routine and specific laboratory investigations were done. The study included all patients >70 years of age diagnosed as acute heart failure as per Boston Criteria . Patients were all followed till either discharge or death.

**Results:** As per Boston score criteria, maximum patient 35 fell into range of 8-12 while remaining had score range 5-7. None of the patients were in lesser score range of 1-4. Out of 52 patients 45 were discharged however seven patient expired. Hypertension was prevalent in elderly patients presented with heart failure, seen in 78% of population and low ferritin seen upto 76% of patients.

**Conclusion:** Hypertension, anemia and low ferritin is highly prevalent in elderly heart failure patients are equally important as of ischemia or valvular pathology and should be addressed equally for better outcomes.

### **Introduction:**

Heart failure (HF) is a major public health problem having a prevalence of over 5.8 million in the USA, and over 23 million worldwide (1). HF is primarily considered as a condition of the elderly (2) with an incidence of 10 per 1000 population after age 65; while approximately 80% of patients hospitalized with HF are more than 65 years old (3,4). The linear growth rate of HF is a sign of its increased prevalence due to population aging and advances in medical treatment. Recent statistics indicates that length of survival among the HF patients is increasing. This trend entails high costs for countries of which elderly population is on the rise (5). HF is a complex syndrome, characterized by its inability to supply blood to cater the metabolic needs of tissues in the presence of normal filling pressures or being capable of doing it only at high filling pressures (5).

### **Material and methods:**

This is observational and prospective cohort descriptive study of elderly heart failure patients, conducted for 6 months at tertiary care hospital. We included 50 patients in our study with first time diagnosis of ADHF with age above 70.

Patients satisfying inclusion and exclusion criteria were recruited in the study after obtaining written informed consent. All elderly patients admitted in emergency, medicine wards and CCU having symptoms of heart failure were first screened. A detailed history was recorded in addition to a thorough clinical examination, and routine and specific laboratory investigations were done. The study included all patients >70 years of age diagnosed as

first time acute decompensated heart failure as per Boston Criteria. Patients were all followed till either discharge or death. Patients with chronic obstructive pulmonary disease were excluded from our present study. Patient investigated for heart failure etiology. Blood investigations CBC, KFT, LFT, Serum ferritin and 2D-Echo for diastolic and systolic function done. Angiography done after stabilization and before discharge of patients in clinically needed patients eg patient with ischemic symptoms, or before AVR in case of aortic stenosis patients, or in patients with low EF. (42 out of 50 patients underwent angiography).

**Results :**

Total 50 patients were participated in our present study.

**Table 1) Gender wise distribution:**

S.NO.	Gender	Percentage of patients
1	Male	58 %
2	Female	42 %

In our study, male and female formed 58% and 42% of study population respectively.

**Table 2) Age wise distribution:**

S.NO.	Age range in years	Percentage of patients
1	70-75	68
2	75-80	30
3	> 80	2

Among our study group, 68% patients were in the age group of 70-75 yrs, 30% were in the age group of 75-80 yrs and one patient was above 80 yr.

**Table 3) Clinical profile of patients**

S.NO.	Symptoms	Percentage of patients
1	dyspnea	100
2	Fatigue before symptoms onset	52
3	pedal edema	45
4	Orthopnea	35
5	paroxysmal nocturnal dyspnea	35
6	Cough	28
7	Chest pain	22
8	Weight gain	30
9	Abdominal Pain	16
10	Nocturia	10

In our study population the most common symptom was dyspnea seen in all patients followed by fatigue (52%) and pedal edema (45%). The other symptoms were Orthopnea and paroxysmal nocturnal dyspnea (PND) seen in 35% each, Cough (28%), Chest pain (22%), Weight gain 30%, Abdominal Pain (16%) and Nocturia (10%).

**Table 4) Clinical profile of patients**

S.NO.	Signs	Percentage of patients
1	chest crepitations	94
2	Raised jugular venous pressure	84
3	pedal edema	46

In our study population most common sign of heart failure was chest crepitations (94%), followed by raised jugular venous pressure (84% patients) and pedal edema (46 % patients).

**Table 5) Assessment of risk factors and LVEF.**

S.NO.	Symptoms	Percentage of patients
1	Hypertension (previous or on presentation >160/90)	78
2	Ischemic heart disease, significant CAD >70% stenosis in one or more coronary vessel.	58
3	Diabetes mellitus	28

4	Tobacco chewing or smoking	46
5	Severe Aortic stenosis	8
6	HFeEF (LVEF <40%) HFmrEF (40-50%) HFpEF (50%)	60 22 18
7	Alcohol intake	16
8	Hb 8-11 gm % Hb <8 gm%	46 16
9	Serum Ferritin <100 ng/ml	76

Most common risk factor for heart failure was hypertension (seen in 78%), Ischemic heart disease (seen in 58% patients) and Diabetes mellitus (seen in 28%). 16% patients had history of alcohol intake while habits of tobacco chewing or smoking were seen in 46% of cases. Low Ferritin was seen in 76% of population and Anemia (Hb below 11 gm%) was also common upto 62% of population and severe anemia seen in 16% of population. Low ejection fraction was present in 60% of population.

**Table 6)** Boston score criteria

S.NO.	Boston score criteria	Number of patients
1	1-4.	0
2	5-7	65
3	8-12	35

As per Boston score criteria, maximum patient 35 fell into range of 8-12 while remaining had score range 5-7. None of the patients were in lesser score range of 1-4. Out of 52 patients 45 were discharged however 7 patients expired. There was no statistically significant correlation with alcohol consumption or tobacco consumption or any other factor to mortality rate.

### Discussion

Acute heart failure (HF) is a major public health concern, responsible for >26 million hospitalizations per year worldwide. Many trials have investigated new therapeutic options for acute HF, with most revealing equivocal results. Successful innovations in therapy for acute HF have remained limited, and standard of care has remained largely unchanged over the past decade, suggesting the need for a new approach for therapeutic decision making and clinical trial design in acute HF. (6,7,8).

Worldwide Heart Failure is a major public health issue. The prevalence of heart failure is known to increase with age and is much higher in elderly patients. One aim of this study is to assess the baseline characteristics for acute heart failure seen in elderly patients (>70 years) presenting to the emergency medical service of a tertiary

care hospital with a diagnosis of acute heart failure based on the Boston Heart Failure criteria. Our analysis revealed a similar gender based distribution in this study group as male dominance.

The etiology and risk factors associated with heart failure are diverse and are likely to vary across world regions based on risk factor prevalence and quality of health care available. Our analysis has identified hypertension to be the most common etiology associated with heart failure followed by anemia and ischemic heart disease and diabetes mellitus. It is also well known that many heart failure cases are associated with multiple risk factors. For better outcomes we need to address all factors to prevent readmission.

Heart failure (HF) is a common cardiovascular condition whose incidence and prevalence are increasing. Being a common reason for urgent hospital admission, it is a major cause of morbidity and mortality for the patients. In the developed countries coronary artery disease remains the leading cause of HF, whereas, in the underdeveloped countries, rheumatic heart disease leading to valvular lesion still remains the commonest causes of HF admission in overall admissions if all age group population included. (9,10). With aging population in India; CAD, HTN are major cause of heart failure in elderly population as of western population. Lack of proper registry causes poor assessment of changing trends. This study is planned to assess the factors associated with heart failure patients in elderly patients. There are some limitations to this study that should be addressed. Firstly, the sample size for this study was relatively small in comparison to the densely populated region due to which the epidemiology and clinical profile of acute HF in the elderly population could not be assessed across all regions. Second, nature of study is of only descriptive study to define profile of patients. Third, Correlation and association of various factors not assessed.

#### **Conclusion:**

Hypertension, anemia and low ferritin is highly prevalent in elderly heart failure patients. This is useful for therapeutic purposes as control of blood pressure and IV iron supplementation can lead to less rate of readmission and improvement of outcomes in this population.

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