

A Study of the Profile of Heart Failure Patients with Reduced Left Ventricular Ejection Fraction at a Tertiary Care Hospital.

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ABSTRACT

Introduction: Despite the advancement in medicine, management of heart failure (HF), which usually presents as a disease syndrome, has been a challenge to healthcare providers. The study was commenced with objective to study the profile of patients presented with heart failure with reduced left ventricular ejection fraction (LVEF) in a tertiary care hospital.

Material and Methods: It was a cross sectional hospital based study. Both male and female patients presented with heart failure with reduced ejection fraction (HFrEF) treated in department of General Medicine, GITAM Institute of Medical Sciences & Research were included based on inclusion and exclusion criteria. A total of 100 consecutive patients were studied during February to October 2019. After obtaining approval from Institutional Ethics Committee and informed consent taken from all study participants data was collected. Data entered in MS excel sheet and analyzed by using SPSS software.

Results: Among total 100 heart failure patients males were 69, females were 31. The mean age of study population was 56.61±13.01 years. All patients presented with shortness of breath of varying degree of New York Heart Association (NYHA) class. The common risk factors observed were hypertension (53%), diabetes (36%), alcohol (14%), smoking (40%). The common causes for heart failure found were Ischemic heart disease (64%), followed by non-ischemic dilated cardiomyopathy (21%) and rheumatic heart disease (15%). Majority of the study participants were receiving treatment with diuretics (66%), statins (65%), followed by beta blockers (25%), aldosterone antagonist (25%), ACE inhibitors (30%).

Conclusions: Early detection and optimal treatment of common risk factors might play role in preventing Heart failure and thereby reducing disease burden in the country.

Key words: Heart Failure, Risk Factors, Optimal Treatment, Tertiary Care Hospital

ejection fraction (HFrEF).⁴ Although many studies were conducted on cardiovascular diseases but only few studies done particularly on heart failure in this part of country, hence this study was commenced with objective to study profile of patients presented with heart failure with reduced LVEF (HFrEF) in a tertiary care hospital. This will enable to know the regional distribution, presentation pattern, response to treatment and prevention plan to reduce the burden of HFrEF.

MATERIAL AND METHODS

This cross sectional hospital based study was done for 9 months (February to October 2019) on patients presented with heart failure with reduced LVEF treated in General Medicine Department, GITAM Institute of Medical Sciences & Research.

Study Population: Both Male and female patients presented with heart failure with reduced LVEF with New York Heart Association (NYHA) Class I-III.

Inclusion criteria

- Both male and female patients presented with heart failure.
- Age ≥ 18 years.
- Left ventricular ejection Fraction (LVEF) $\leq 45\%$
- Patients in NYHA class I-III requiring outpatient basis treatment
- Those who were willing to participate in the study.

Exclusion criteria

- Age < 18 years.
- Left ventricular ejection Fraction (LVEF) $> 45\%$
- Those who required inpatient basis treatment.
- Those who were not willing to participate in the study.

INTRODUCTION

Cardiovascular diseases (CVD) are the leading cause of mortality and morbidity in both developed and developing countries.¹ In a global study published by Lancet² reported that overall, cardiovascular diseases contributed to 28.1% of the total deaths and 14.1% of the total DALYs in India in 2016, compared with 15.2% and 6.9% respectively, in 1990. Heart failure has been a global pandemic, since it affects around 26 million people worldwide.³ Clinically, Heart failure is typically classified into two major types based on the functional status of heart: heart failure with preserved ejection fraction (HFpEF) and heart failure with reduced

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Sample size: 100 consecutive patients with heart failure with reduced LVEF were considered during this study period.

Method of data collection: Study participants were explained about the purpose of the study and efforts were taken for their maximum co-operation in the study. After taking the informed consent data was collected. General information of the study subjects like name, age, gender, address, were taken. Detailed history about associated conditions like ischemic heart disease, rheumatic heart disease, diabetes mellitus, hypertension, thyroid disorders, smoking, alcohol, etc., were taken. History of symptoms like Shortness of breath, pedal edema, orthopnea, etc., were asked. General Physical Examination and anthropometric measurements like height and weight were measured, blood pressure, heart rate were recorded. Investigations like Serum creatinine, ECG, Echocardiography, were done. Information regarding medications like beta blockers, Angiotensin converting enzyme inhibitors (ACEIs) or Angiotensin receptor blockers (ARBs) or Angiotensin receptor blockers-Nepriylsin inhibitor (ARNI), diuretics, digoxin, statins, aldosterone antagonist etc. were taken.

Study tools: Non-stretchable measuring tape, Calibrated standard adult weighing scale, sphygmomanometer, stethoscope, ECG, Echocardiography etc.

After obtaining permission from the Institutional Ethics Committee, GITAM Institute of Medical Sciences & Research, Visakhapatnam, study was commenced. Informed written consent in the local language was taken from all the study participants who were included in the study.

STATISTICAL ANALYSIS

Data was entered in MS excel sheet and analyzed by using SPSS software trial version 21. Qualitative data was represented as proportions/percentages and quantitative data was represented as Means & standard deviations.

RESULTS

A total of 100 heart failure patients were studied. Among total 100 heart failure patients males were 69, females were 31 (figure-1).

From the table-1, majority (60%) of the study population were in the age group 51 to 70 years. Out of 69 male patients 39 (56.52%) were in the in the age group 50-70 years. Out of 31 female patients 21 (67.74%) were in the age group 51-70 years.

Age category	Female	Male	Total
18-20 yrs.	1	0	1
21-30 yrs.	1	1	2
31-40 yrs.	3	7	10
41-50 yrs.	3	12	15
51-60 yrs.	11	25	36
61-70 yrs.	10	14	24
71-80 yrs.	1	7	8
>80 yrs.	1	3	4
Total	31	69	100

Table-1: Age distribution of the study population

In the present study the mean age of study population was 56.61 ± 13.01 , minimum age presented with heart failure was 18 yrs and maximum age of 92 yrs were presented. Mean blood pressure was $127/79 \pm 19/12$, with mean heart rate of 85 ± 19 . Mean serum creatinine was 1.02 ± 0.57 . Mean Ejection fraction was 33.6 ± 6.4 (table-2).

The most common symptom was Shortness of breath, seen in all cases with NYHA class I (20%), Class II (60%), Class III (20%). Pedal edema seen in 35% of cases, Chest pain seen in 30% of cases, Orthopnea seen in 10% patients and paroxysmal nocturnal dyspnea was observed in only 2% of cases (table-3).

Hypertension was seen in 53% patients and diabetes in 36%. 40% of the patients were known smokers, and 14% were known alcoholics. Hypothyroidism was seen in 4% (figure-2).

From the above table the most common cause for heart failure was Ischemic heart disease seen in 64%, followed by non-ischemic dilated cardiomyopathy was present in 21% of patients and rheumatic heart disease was seen in 15% of patients (table-4).

From the above table majority of the study participants were receiving treatment with diuretics (66%), statins (65%),

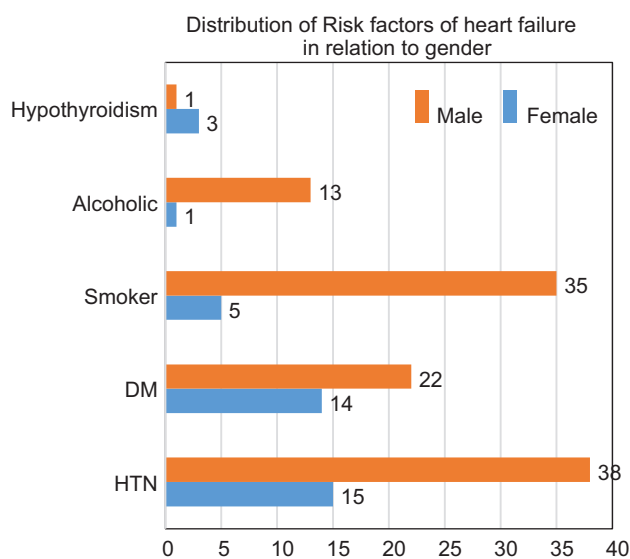


Figure-1: Distribution of cases based on gender

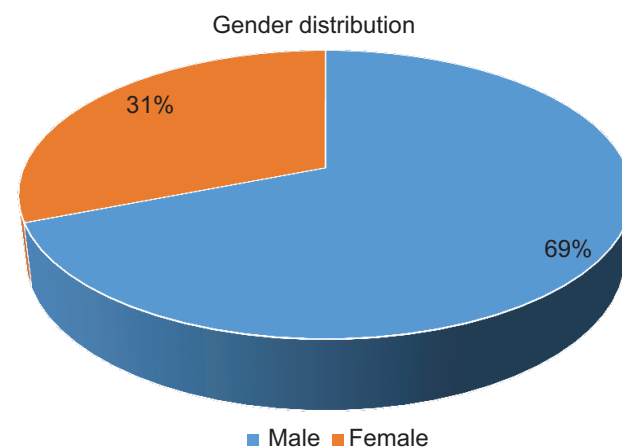


Figure-2: Distribution of study population based on Risk factors

Variable	Maximum	Minimum	Mean	Standard deviation
Age	92	18	56.6	13.00
Heart rate	171	60	85.4	19.3
Blood pressure	180/110	90/50	127/79	19/12
Creatinine	3.00	0.70	1.02	0.52
Ejection fraction	44	10	33.6	6.4

Table-2: Distribution of study population based on baseline characteristics

Symptom	Female	Male	Total
Shortness of breath	31	69	100
Pedal edema	10	25	35
Chest pain	8	22	30
Orthopnea	3	7	10
Paroxysmal nocturnal dyspnea	1	1	2

Table-3: Distribution of cases based on symptoms among heart failure patients

Causes	Female	Male	Total
Ischemic heart disease	15	49	64
Non-ischemic dilated cardiomyopathy	9	12	21
Rheumatic heart disease	4	11	15

Table-4: Distribution of study population based on etiology of heart failure

Medication	Female	Male	Total
Diuretics	24	42	66
Statins	19	41	65
ACE inhibitors	10	20	30
Beta blockers	11	14	25
Aldosterone antagonist	9	16	25
Angiotensin receptor blockers	3	12	15
ARNI	2	6	8
Digoxin	1	2	3

Table-5: Distribution of study participants based on treatment

followed by ACE inhibitors (30%), beta blockers (25%) aldosterone antagonist (25%), etc (table-5).

DISCUSSION

In the present study majority were male (69%). Similar findings were observed by Majumder B et al.,⁵ stated that 64.4% were male. It indicates that heart failure with reduced ejection fraction (HFrEF) more common among males. In this study the mean age of study population was 56.61±13.01 years. Similar findings were observed in Munusamy V et al.,⁶ who found that the mean age was 57.78 ± 12.78 years. It states that as cardiovascular risk factors like diabetes mellitus, hypertension occurs with increasing age, heart failure becomes more common beyond 50 years age. The most common symptom found was shortness of breath (100%). These findings were consistent with study done by Ghimire R et al.,⁷ reported that the most common symptom was shortness of breath (100%). In the present study the most common risk factor was hypertension (53%) followed by diabetes (36%), smoking (40%) and alcohol (14%). These

findings were inconsistent with study done by Seetharama N et al.,⁸ who found that 76% had smoking followed by hypertension (23%), diabetes (21%).

In this study the most common etiology found was Ischemic heart diseases (64%), followed by non-ischemic dilated cardiomyopathy (21%), Rheumatic heart diseases (15%). Similar findings were observed by Majumder B et al.,⁵ 58.6% of study population presented with Ischemic heart disease. Our findings were inconsistent with a study done by Chaturvedi V¹ et al reported that the most common etiology was Rheumatic heart disease (51.96%). Because the most common risk factors observed in this study were hypertension & diabetes, so the most common etiology found was ischemic heart disease. In the present study majority of the study participants were receiving treatment with diuretics (66%), statins (65%), followed by ACE inhibitors (30%), beta blockers (25%) aldosterone antagonist (25%), etc. Similar findings were observed in a study by Seetharama N et al.,⁸ stated that almost 65.4%, 64.2%, 39.2%, and 24.2% received statins, loop Diuretics (LDs), beta-blockers and ACE inhibitors, respectively. The reasons might be lower understanding of the importance of guideline directed medical therapy and acceptance from patient side and physicians' inertia to start and optimize maximum tolerated treatment.

Limitations

- Small sample size
- Follow up is not there
- Heart failure patients who were hospitalized were not considered.
- Ischemic heart disease was coined in view of regional wall motion abnormality in echocardiogram report, coronary angiography was not done
- Education and socioeconomic levels of patients possibly contribute towards discrepancies in comparative studies.

CONCLUSION

The Present study focused on profile of heart failure patients with reduced LVEF, who were treated on outpatient basis in a tertiary care hospital. Though large numbers of Western data are available regarding etiology of Heart failure, Indian data are lacking specially in this part of country. Though Rheumatic heart disease is still an important contributor of heart failure in this part of country, Ischemic heart disease is the most important cause of Heat failure found in the present study. Hypertension and diabetes are the most common risk factors observed in this study. Early detection and treatment of risk factors might have a great role in preventing the

development of Heart failure and reducing the burden on health care system. Health education regarding common risk factors and etiology of heart failure should be given to all people. Physicians' proactive care and patients' education are the need of the hour for improving heart failure outcomes and to reduce heart failure hospitalization.

REFERENCES

1. Chaturvedi V, Parakh N, Seth S, Bhargava B, Ramakrishnan S, Roy A, et al. Heart failure in India: The INDUS (INDia Ukieri Study) study. *J Pract Cardiovasc Sci* 2016;2:28-35.
2. India State-Level Disease Burden Initiative CVD Collaborators. The changing patterns of cardiovascular diseases and their risk factors in the states of India: the Global Burden of Disease Study 1990–2016. *Lancet Glob Health* 2018;6: e1339–51.
3. Ponikowski P, Anker SD, AlHabib KF, et al. Heart failure: preventing disease and death worldwide. *ESC Heart Failure* 2014;1:4–25.
4. Arati A, Inamdar and Ajinkya C. Inamdar. Heart Failure: Diagnosis, Management and Utilization. *J. Clin. Med.* 2016; 5:62.
5. Majumder B, Bahuguna YM, Chatterjee S. A profile of heart failure patients in a tertiary care centre in Eastern India. *Int J Res Med Sci* 2017;5:216-8.
6. Munusamy V, Goenka L, Sharma M, Ramamoorthy T, Jha D, Solaipriya S, et al. Clinical presentation and 2-year mortality outcomes in acute heart failure in a tertiary care hospital in South India: A retrospective cohort study. *J Clin Prev Cardiol* 2019;8:56-63.
7. Ghimire R, Dhungana SP. Evaluation of drugs used in chronic heart failure at tertiary care centre: a hospital based study. *J Cardiovasc Thorac Res* 2019;11:79-84.
8. Seetharama N, Mahalingappa R, Ranjith Kumar GK, Veerappa V, Aravindh CL. Clinical profile of acute myocardial infarction patients: a study in tertiary care centre. *Int J Res Med Sci* 2015;3:412-9.

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