



CLINICAL PROFILE OF HEART FAILURE

Cardiology

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ABSTRACT

BACKGROUND AND OBJECTIVES: The heart failure is major burden to the society and leads to a heavy toll in morbidity, mortality and health care costs. With increasing incidence of cardiovascular disease, India is witnessing a simultaneous surge in incidence of heart failure, including among relatively younger men and women who were earlier considered out of the risk bracket of this condition. This study is an attempt to evaluate clinical profile of heart failure in patients admitted to Sir Takhtasinhji General Hospital, Bhavnagar.

METHOD: This study was done on 100 patients admitted in Sir T. General Hospital, Bhavnagar with clinical evidence of heart failure.

RESULTS: Male gender (55%) had higher incidence of heart failure as compared to female (45%) with mean age of 47.43 ± 14.69 years. Breathlessness was most common presenting symptom and bilateral basal crepitation was most common sign. IHD was most common cause of heart failure followed by VHD. Lack of compliance was most common precipitating factor whereas HTN was most common co morbidity.

CONCLUSION: Incidence of heart failure is more common in the middle age group patients i.e., in age group of 40 to 50 years 29%. IHD is most common cause of heart failure. HFrEF was found in (57%) of patients and HFpEF was found in (43%) of patients. The mortality in the present study was (7%) and survival was (93%).

KEYWORDS

IHD-Ischemic heart disease, VHD -Valvular heart disease, HTN -Hypertension, HFrEF- Heart failure with reduced ejection fraction, HFpEF- Heart failure with preserved ejection fraction.

INTRODUCTION

ACC/AHA defines as heart failure is a complex clinical syndrome that can result from any structural or functional cardiac disorder that impairs ventricle filling or ejection of blood. The cardinal manifestations of heart failure are dyspnea and fatigue, which may limit exercise tolerance and fluid retention, which may lead to pulmonary congestion and/or splanchnic congestion and peripheral edema. The prevalence and etiology of heart failure has been previously incompletely described in Indian population due to absence of surveillance programs to track incidence, prevalence, causes etc. and there is also anticipation that the problem of heart failure will double in next 30-40 years hence this study.

AIM

To study clinical profile of heart failure in patients admitted in Sir T. General Hospital Bhavnagar.

OBJECTIVES

- To determine incidence of heart failure in different age group people in patients admitted with heart failure in Sir T. General Hospital, Bhavnagar.
- To determine the different etiologies causing heart failure.
- To analyze the different risk factor causing heart failure.
- To determine the steps need to be taken to prevent heart failure.

METHODS AND MATERIALS

SELECTION OF PATIENTS:

Patients admitted in Sir Takhtasinhji General Hospital, with history of heart failure symptoms are included in the study.

STUDY CENTRE: Department of General Medicine, Sir Takhtasinhji General Hospital, Bhavnagar, Gujarat.

DURATION OF THE STUDY: 6 months

STUDY DESIGN: Cross sectional analytical study

SAMPLE SIZE: 100 patients

DATA COLLECTION AND METHODS:

Patients are subjected to history questioning, clinical examinations and blood sampling.

PROCEDURE / INVESTIGATION DETAILS:

- Complete Blood Count

- Renal Function Test – Urea, Creatinine
- Serum Electrolytes
- Random blood sugar
- ECG
- Echocardiogram
- Chest X-Ray
- Blood pressure
- 2D Echocardiogram

INCLUSION CRITERIA:

- Age: above 12 years.
- Sex-both genders.
- Patients presenting with symptoms of heart failure according to Framingham criteria.

Major (Heart Failure diagnosis requires 1 or more criteria positive)

- Acute pulmonary edema
- Cardiomegaly
- Hepatojugular reflex
- Neck vein distention
- Paroxysmal nocturnal Dyspnea or Orthopnea
- Pulmonary rales
- Third Heart Sound (S3 Gallup Rhythm)

Minor (Heart Failure diagnosis requires 2 or more criteria positive)

Ankle

- edema
- Dyspnea on exertion
- Hepatomegaly
- Nocturnal cough
- Pleural Effusion
- Tachycardia (Heart Rate >120 beats per minute)

- Patients willing to give written informed consent.

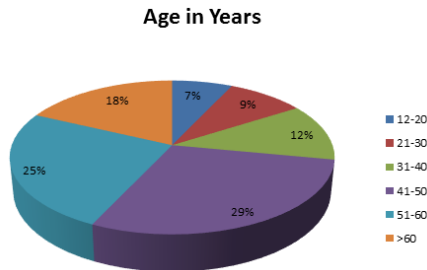
EXCLUSION CRITERIA:

- Patient age less than 12 years.
- Patient who refuse to participate in study.

OBSERVATION AND RESULTS

TABLE 1: AGE WISE DISTRIBUTION

Age in years	No of patients (%)
12-20	7 (7%)
21-30	9(9%)
31-40	12 (12%)
41-50	29 (29%)
51-60	25(25%)
> 60	18(18%)
Mean Age	47.43± 14.69

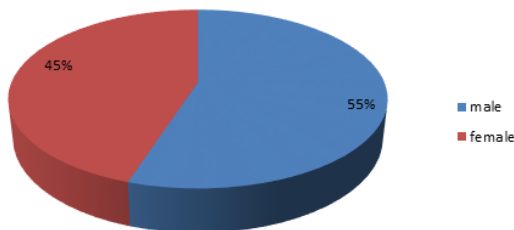


From the above table, it was found that (29%) of the patients were in the 41-50 years group followed by 51-60 years of the age as (25%). The youngest age of the patients was 16 years and 72 year was older age. In the present study, the mean age was 47.43 ± 14.69 years.

TABLE 2: GENDER WISE DISTRIBUTION

Gender	Total (n=100)
Male	55 (55%)
Female	45(45%)
Total	100 (100%)

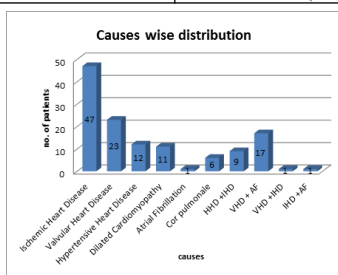
Gender wise distribution



On gender wise distribution, it was found that Male were (55%) higher than female (45%) because of lifestyle modification and unhealthy diet. More over the Male: Female ratio was 1.22:1.

TABLE 3: CAUSE WISE DISTRIBUTION

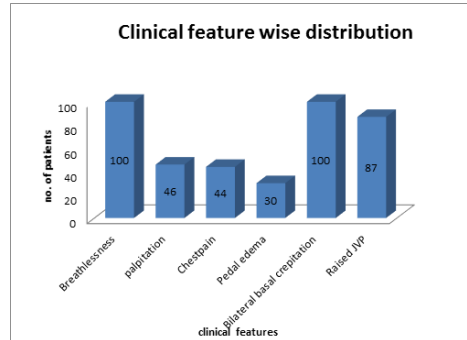
Cause	No of Patients (%)
Ischemic Heart Disease	47(47%)
Valvular Heart Disease	23(23%)
Hypertensive Heart Disease	12(12%)
Dilated Cardiomyopathy	11(11%)
Atrial Fibrillation	1(1%)
Cor pulmonale	6(6%)
HHD +IHD	9(9%)
VHD + AF	17(17%)
VHD +IHD	1(1%)
IHD +AF	1(1%)



In the present study, heart failure was mostly cause by Ischemic Heart disease (47%) followed by Valvular Heart Disease (23%).

TABLE 4: CLINICAL FEATURE WISE DISTRIBUTION

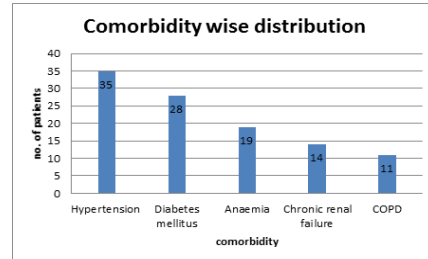
Clinical features	No. Patient (%)
Breathlessness	100(100%)
Palpitation	46(46%)
Chest pain	44(44%)
Pedal oedema	30(30%)
Bilateral basal crepitation	100(100%)
Raised JVP	87(87%)



In our study most common symptom was breathlessness (100%) followed by palpitation (46%). Most common sign was bilateral basal crepitation (100%).

TABLE 5: CO-MORBIDITIES WISE DISTRIBUTION

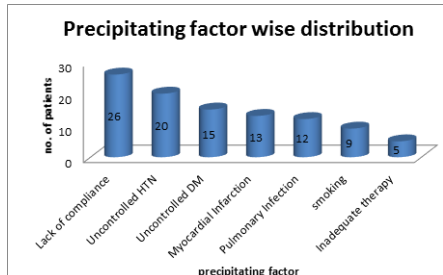
Co-Morbidities	No. of Patients (%)
Hypertension	35(35%)
Diabetes mellitus	28(28%)
Anaemia	19(19%)
Chronic renal failure	14(14%)
COPD	11(11%)



In the present study, hypertension was most one of the most common co morbidities (35%) followed diabetes mellitus with (28%) respectively. In depth, Chronic Renal Failure (14%) and anaemia (19%) were significantly responsible for risk of heart failure.

TABLE 6: PRECIPITATING FACTOR WISE DISTRIBUTION

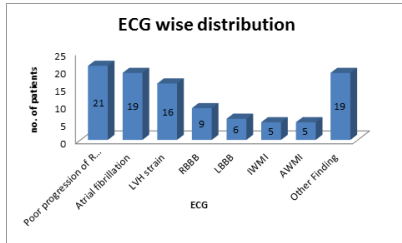
Precipitating Factor	No of Patients (%)
Lack of compliance	26(26%)
Uncontrolled HTN	20(20%)
Uncontrolled DM	15(15%)
Myocardial Infarction	13(13%)
Pulmonary Infection	12(12%)
Smoking	9(9%)
Inadequate therapy	5(5%)



In present study, most common precipitating factor was lack of compliance (26%) followed by uncontrolled HTN (20%) and uncontrolled DM(15%).

TABLE 7: ECG FINDING WISE DISTRIBUTION

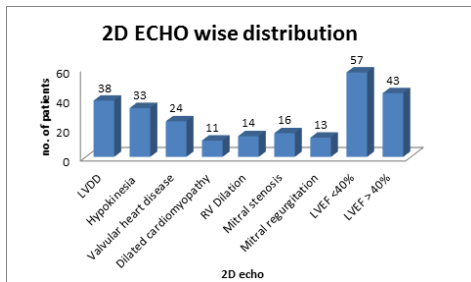
ECG	No of Patients (%)
Poor progression of R wave	21(21%)
Atrial fibrillation	19(19%)
LVH strain	16(16%)
RBBB	9(9%)
LBBB	6(6%)
IWMI	5(5%)
AWMI	5(5%)
Other Finding	19(19%)



In ECG wise distribution PPRW was most common presentation (21%) then atrial fibrillation (19%). Other ECG findings were in seen as LVH strain (16%), RBBB (9%), LBBB (6%), IWMI (5%), AWMI (5%), other findings (19%). Others finding include sinus tachycardia (4%), bifascicular block (1%), q with T inversion in II,III,avF (7%), ST depression v1 to v6 (3%),qs v1 to v4 (4%).

TABLE 8: ECHO FINDING

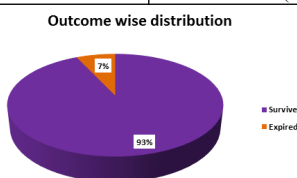
2D Echo	No of Patients (%)
LVDD	38(38%)
Hypokinesia	33(33%)
Valvular heart disease	24(24%)
Dilated cardiomyopathy	11(11%)
RV Dilatation	14(14%)
Mitral stenosis	16(16%)
Mitral regurgitation	13(13%)
LVEF <40%	57(57%)
LVEF > 40%	43(43%)



In the current study, Echo finding stated that, LVDD was seen in (38%), hypokinesia (33%), valvular heart disease (24%), RV Dilatation (14%), dilated cardiomyopathy (11%), mitral stenosis (16%), mitral regurgitation (13%). In addition, HFpEF was found as (43%) while HFrEF found in (57%) of patients.

TABLE 9: OUTCOME WISE DISTRIBUTION

Outcome	No of Patients (%)
Survive	93 (93%)
Expired	7 (7%)
Total	100 (100%)



From the present study, it was found that (93%) was survived and (7%) of patients were expired.

DISCUSSION

The heart failure syndrome is one of the major burdens of hospital admissions. The problem of readmission in cardiac failure patients is increasing. So it is necessary to have efforts to decrease its incidence and prevalence.

AGE AND HEART FAILURE:

	Present study	L Dubey et al ⁷⁶	DM Henkel et al ⁷⁷
Mean age	47.43	57.12	76.40

Our study showed that the heart failure is occurring in relatively younger mean age group 47.43years than in other studies conducted in various hospitals such as **L Dubey et al⁷⁶** and **DM Henkel et al⁷⁷** as 57.12 years and 76.4 years respectively.

The Framingham study showed that the incidence and prevalence of heart failure increases steeply with age, but in were common in the age group of 40 to 60 years.

GENDER AND HEART FAILURE:

Ratio	Present study	L Dubey et al ⁷⁶	Singh RS et al ⁷⁹
Male: Female	1.22:1	1.62:1	6:1

Vaccarino et al⁷⁸ showed women can tolerate heart failure better than men because the left ventricular systolic function and high mean arterial pressure is better preserved in these patients. **Singh RS et al⁷⁹** study showed male to female ratio of 6:1 and **L Dubey et al⁷⁶** study showed male to female ratio of 1.62:1 which were higher than our study 1.22:1. Our study showed 55% of males and 45% females in medical wards.

CAUSE AND HEART FAILURE:

Cause	Present study	L Dubey et al ⁷⁶	Majumder B et al ⁸⁰
Ischemic heart disease	47%	36.5%	58.6%
Valvular heart disease	23%	25.5%	14.7%
Hypertensive heart disease	12%	8.6%	11.7%

In present study ischemic heart disease leading to heart failure was found in (47%) patients, valvular heart disease in (23%) and hypertensive heart disease in (12%). **L Dubey et al⁷⁶** study showed ischemic heart disease as cause of heart failure in (36.5%),valvular heart disease in (25.5%) and hypertensive heart failure in (8.6%).**Majumder B et al⁸⁰** study showed ischemic heart disease as cause of heart failure in(58.6%),valvular heart disease in (14.7%) and hypertensive heart failure in (11.7%)

In both of above study most common cause of heart failure was ischemic heart disease followed by valvular heart disease which was same as present study.

CLINICAL FEATURES AND HEART FAILURE:

Clinical features	Present study	L Dubey et al ⁷⁶	A Roby et al ⁸²
Breathlessness	100%	81%	84.51%
Palpitation	46%	28%	32.54%
Pedal edema	30%	56%	26.6%
Bilateral basal crepitation	100%	68%	89.94%

In present study, most common symptom associated with heart failure was breathlessness (100%) which was near same as found in **L Dubey et al⁷⁶** study (81%) and **A Roby et al⁸²** study (84.51%). In present study, most common sign was bilateral basal crepitation (100%) which was compared with **L Dubey et al⁷⁶** study (68%) and **A Roby et al⁸²** study (89.94%). Whereas pedal edema was found in only (30%) of patients in present study.

COMORBIDITY AND HEART FAILURE:

Co morbidity	Present study	Majumder B et al ⁸⁰
Hypertension	35%	54.4%
Diabetes mellitus	28%	28.9%

In present study, hypertension (35%) was most common co morbidity

associated with heart failure followed by diabetes (28%), which were similar to study done by **Majumder B et al⁸⁰** showed hypertension (54.4%) and diabetes (28.4%).

PRECIPITATING FACTOR AND HEART FAILURE:

Precipitating factor	Present study	Majumder B et al ⁸⁰
Lack of compliance	26%	23.8%
Myocardial infarction	13%	51.4%
Pulmonary infection	12%	2.8%

In present study, most common precipitating factor was lack of compliance to medicine (26%) which was compare to study by **Majumder B et al⁸⁰** in which most common precipitating factor was myocardial infarction (51.4%) and lack of compliance was seen in (23.8%) of patients which was similar to our study. And also in present study pulmonary infection was seen in (12%) of patients compare to study by **Majumder B et al⁸⁰** showed only (2.8%) of patients had pulmonary infection.

ECG AND HEART FAILURE:

ECG	Present study	K M Karaye et al ⁸³	I K Owusu et al ⁸⁴
LVH strain	16%	67.3%	43.7%
Atrial fibrillation	19%	15.9%	8.3%
LBBB	6%	5.3%	19.2%

An ECG change in heart failure varies widely in different studies. In present study, most common ecg changes was PPRW (21%) followed by atrial fibrillation (19%) and LVH strain (16%). Whereas left bundle branch block was seen in only (6%) of the patients. In study by **K M Karaye et al⁸³** showed most common finding was LVH strain (67.3%), whereas atrial fibrillation was seen in (15.9%) and LBBB was seen in (5.3%) of patients. In similar study by **I K Owusu et al⁸⁴** showed LVH strain in (43.7%), atrial fibrillation in (8.3%) and LBBB in (19.2%) of patients. Thus ecg changes varies widely among different studies.

2D ECHOCARDIOGRAM AND HEART FAILURE:

Ejection fraction	Present study	Majumder B et al ⁸⁰	A Roby et al ⁸²
Reduced (<40%)	57.00%	56.40%	54.43%
Preserved (>40%)	43.00%	46.30%	45.57%

In present study, heart failure with reduced ejection fraction was present in (57%) of patients, whereas heart failure with preserved ejection fraction was seen in (43%) of patients. Present study is accordance with most of the other studies such as Majumder B et al⁸⁰ and A Roby et al⁸² study which showed HF_rEF & HF_pEF (56.40%) & (46.30%) and (54.43%) & (45.57%) respectively.

OUTCOME AND HEART FAILURE:

Outcome	Present study	M R Poffo et al ⁸⁵
Mortality	7.00%	11.20%

In present study, mortality was (7.00%) which was in accordance with study done by **M R Poffo et al⁸⁵** in which mortality was (11.20%). Thus timely intervention and appropriate treatment in heart failure can save lives and improve outcome.

SUMMARY

- The study was carried out at Sir T. general hospital, Bhavnagar included 100 patients with heart failure.
- The maximum patients were in 41-50 years age group (29%) and minimum in 12-20 years age group (7%). The youngest patient was 16yr and oldest was 72yr, with mean age 47.43 ± 14.69 yr.
- Of all the patients with heart failure male gender (55%) have higher incidence as compared to female (45%).
- In present study, most common cause of heart failure was ischemic heart disease (47%) followed by valvular heart disease (23%) and hypertensive heart disease (12%). DCM accounts for (11%) of cases.
- In present study, clinical feature wise most common symptom was breathlessness (100%) followed by palpitation (46%). Whereas most common sign was bilateral basal crepitation (100%).
- In present study, most common co morbidity associated with heart failure was hypertension (35%) followed by diabetes mellitus (28%).
- In present study, most common precipitating factor was lack of compliance to drugs (26%), Uncontrolled HTN and uncontrolled DM accounts for (20%) and (15%) of patient respectively.
- In present study, most common ECG changes was PPRW (21%)

followed by AF (19%) and LVH strain pattern (16%). Whereas LBBB accounts for (6%) of patients.

- In present study, most common 2D ECHO finding was LVDD (38%) followed by hypokinesia (33%). Based on EF, HF_rEF was found in (57%) of patients and HF_pEF was found in (43%) of patients.
- The mortality in the present study was (7%) and survival was (93%).

CONCLUSION

The inferences drawn from the study are as follows:

- Incidence of heart failure is more common in the middle age group patients i.e. in age group of 40 to 50 years 29%.
- Ischemic heart disease is most common cause of heart failure.
- Hypertension is most common co morbidity associated with heart failure, thus timely detection and treatment of hypertension decrease incidence and morbidity associated with heart failure.
- Certain diseases like rheumatic valvular heart diseases are second most common cause of heart failure as per present study, amenable to surgical correction which can prevent the heart failure.
- Drugs that decrease the disease progression are not used appropriately as there is lack of compliance and awareness.
- Left ventricular systolic dysfunction and diastolic dysfunction are the most common echocardiogram finding associated with heart failure.
- HF_rEF (57%) is associated with more incidence of heart failure compare to HF_pEF (43%).
- Early evaluation and appropriate treatment during initial stage of heart failure can halt progression and improve prognosis.
- Thus multidisciplinary approach is required for efficient management of heart failure.

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