

## Original Research Article

## Study on Clinical Profile of the Patients with Congestive Heart Failure at SKMCH, Muzaffarpur, Bihar

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### ABSTRACT

**Background:** The prevalence and incidence of heart failure (HF), a prevalent cardiovascular illness, have recently been rising. The prevention and management of it are more difficult due to the multiple risk factors that contribute to its genesis.

The current study's objective was to evaluate the clinical characteristics of heart failure patients.

**Methods:** Between September 2021 and July 2022, a prospective observational study was conducted among the patients hospitalised to the SKMCH's Department of Medicine in Muzaffarpur, Bihar. The study comprised patients who met the European Society of Cardiology (ESC) HF criteria. Based on a population study and hospital OPD, the prevalence of congestive heart failure was assessed.

**Results:** The major causes of HF were smoking, drunkenness, ischemic heart disease, and hypertension. Breathlessness (100%), foot edoema (92.3%), cough (57.7%), and palpitation (50%) were the patients' most frequent symptoms. The patients' primary symptoms included oedematous feet (100%), basal crepitations (80.3%), increased jugular venous distention (JVD) (57.7%), and S3. Chest X-ray (CXR) results show that increased Cardiothoracic ratio was reported by 76.9% of the patients. Left Ventricular Hypertrophy (LVH) and arrhythmias (predominantly AF-19.2%) each accounted for 26.9% of the total. According to estimates, the prevalence of HF ranges from 0.51 to 27.27, respectively.

**Conclusion:** Apart from smoking and drunkenness, ischemic heart disease and hypertension were the main risk factors, and the treatment of concomitant illnesses may have a significant impact on clinical care.

**Keywords:** Heart Failure; Smoking; Hypertension; Prevalence.

### INTRODUCTION

Heart failure (HF) affects more than 5.8 million people in the United States and more than 23 million people globally<sup>[1]</sup>. HF is typically thought of as an elderly person's ailment<sup>[2]</sup>, with a frequency of 10 per 1000 people after the age of 65; yet, 80 percent of HF patients who are

hospitalised are over the age of 65<sup>[3,4]</sup>. The linear growth rate of HF indicates that it is becoming more common as a result of population ageing and improvements in medical care. According to recent statistics, individuals with heart failure are living longer. For countries where the older population is growing, this tendency entails considerable costs<sup>[5]</sup>. A complex illness known as HF is characterised by its inability to deliver blood to tissues to meet their metabolic needs when filling pressures are normal, or by doing so only when filling pressures are high<sup>[5]</sup>. With a lifetime risk of 1 in 5, HF is a rising cause of hospitalisation globally. Cardiomyopathies, congenital heart disease, endocarditis, and myocarditis are a few other possible causes of HF, in addition to CAD, hypertension, and rheumatic heart disease. It remains a frequent cause of emergency hospital admissions and a significant contributor to morbidity and mortality. Since HF is complex, it is frequently challenging to develop health policies for its decreased incidence. Even though the significance of HF is becoming more well acknowledged, epidemiological, clinical, and therapeutic data on the condition are woefully lacking, which makes it challenging to set priorities and develop preventive efforts. Heart failure's effects on the economy and society have made it necessary to have more details about these patients' profiles. In India, the prevalence of HF and the frequency of hospital admissions have grown to such proportions in recent years that they have emerged as a significant public health issue. Determining the most common risk factors for HF among patients treated at the SKMCH's OPD for Medicine in Muzaffarpur, Bihar, and assessing the clinical symptoms of HF patients were the goals of the current study.

## MATERIAL AND METHOD

Between September 2021 and July 2022, a prospective observational study was conducted on 26 patients with an age range of 25 to 70 years (15 men and 11 women) admitted to the medicine department of Sri Krishna Medical College and Hospital, Muzaffarpur, Bihar. The patients were all diagnosed with congestive heart failure and met the requirements of the European Society of Cardiology (ESC) (CHF). A 95% confidence interval with a 3% sampling error was used to determine the sample size. To collect data on the clinical characteristics of the patients, a structured proforma was created and approved in the pilot research. The proforma included data on anthropometric, demographic, and clinical information. Major risk factors for heart disease, including smoking, drinking, diabetes, hypertension, ischemic heart disease, and hyperlipidemia, were noted in detail. Measurements of height, weight, waist-hip ratio (WHR), and blood pressure were part of the physical examination (BP).

A calibrated spring balance was used to measure weight in kilos and height in millimetres. The upright hip girth was measured at the inter-trochanteric level, while the supine waist girth was measured at the umbilicus level (during quiet breathing).

Jugular Venous Pressure (JVP) was 5+ centimetres when measured (as the vertical distance from the top of the pulsation in the jugular veins to the angle of Louis). Patients were checked for abdomino-jugular reflux while sitting or lying down with their heads tilted at 45 degrees. Standard mercury sphygmomanometers were used to measure blood pressure. The correct standardisation was used to record a 12-lead standard ECG. Cardio-thoracic ratio was measured after a chest X-ray. In every instance, trans thoracic echocardiography (TTE) was performed. According to the ward's standard procedure, patients received medical attention and were the focus of investigations.

The community's congestive HF problem was also attempted to be quantified. Due to a lack of information, this exercise may only offer an informed guess or a rough estimate.

Key characteristics: Breathlessness, weariness, whether at rest or after effort, or swollen ankles are only a few examples of heart failure symptoms. Objective cardiac dysfunction is also present (at rest).

## RESULTS

Tables 1 and 2 illustrate the prevalence of risk variables in the study population. The main risk factors were IHD and hypertension, then smoking and drunkenness. Breathlessness was the most prevalent symptom among the HF patients.

More than 90% of the participants experienced foot edoema. Cough and palpitations were experienced by about half of the individuals. In roughly 30% of the sample, the symptoms of chest discomfort, weariness, and giddiness were noted. 19 percent of people reported experiencing syncope.

**Table 1 : Relative frequency of risk factors for HF (n=26)**

Sl. No.	Risk Factor	Number	Percentage
1	Smoking	10	38.5
2	Alcohol	10	38.5
3	IHD	8	30.8
4	HTN	6	23.1
5	DM	2	7.7
6	Hyperlipidemia	1	3.8
7	Rheumatic fever	1	3.8

**Table 2 : Relative frequency of symptoms in patients with HF (n=26)**

Sl. No.	Risk Factor	Number	Percentage
1	Breathlessness	26	100.0
2	Swelling of feet	24	92.3
3	Cough	15	57.7
4	Palpitation	13	50.0
5	Chest pain	9	34.6
6	Fatigue	8	30.8
7	Giddiness	7	26.9
8	Syncope	5	19.2

Table 3 displays the anthropometric mean values. The study population's mean body mass index (BMI) was  $20.62 \pm 5.57$  kg/m<sup>2</sup>, with ranges of 11.34 and 30.48. WHR had a mean value of  $0.91 \pm 0.06$  and a range of 0.78 to 1.02. The study population's average systolic and diastolic blood pressures were  $130.38 \pm 25.43$  mmHg and  $89.46 \pm 17.00$  mmHg, respectively.

The average pulse pressure was similarly  $42.84 \pm 16.25$ . Table 4 displays the frequency distribution of the physical examination parameters. All of the cases under investigation had edoema feet. JVD and Crackles were detected to 92.3% and 83.3%, respectively. In 50% of the patients, hepatomegaly, pallor, and a third heart sound were noted. 35 percent of the participants had sacral edoema, which was followed by parasternal pulsation, a flat note on percussion, and cyanosis in roughly 15.3%, 11.5%, and 3.8% of the subjects, respectively.

**Table 3 :Anthropometry in patients with HF**

Criteria	Range	Mean	S.D.	Median
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Weight (Kg)	32-84	54	12.8	53.5
Height (Meters)	140-173	159	9.55	158
BMI (Kgs/m <sup>2</sup> )	11.34-30.48	20.62	5.57	19.71
Waist circumference (cms)	34-95	75.19	14.40	74
Hip circumference (cms)	36-105	82.5	13.81	80.5
WHR	0.78-1.02	0.91	0.06	0.91
Pulse rate (bpm)	74-160	101.76	20.72	100
SBP (mmHg)	80-180	130.38	25.43	130
DBP (mmHg)	40-120	89.46	17.00	90
Pulse pressure (mmHg)	20-70	42.84	16.25	40

**Table 4 : Relative frequency of symptoms in patients with HF (n=26)**

Sl. No.	Condition	Number	Percentage
1	Edema feet	26	100.00
2	JVD	24	92.3
3	Crackles	21	80.3
4	Third heart sound	15	57.7
5	Hepatomegaly	13	50.0
6	Pallor	12	46.1
7	Murmurs	12	46.1
8	Sacral edema	9	34.6
9	Parasternal pulsation	4	15.3
10	Flat note	3	11.5
11	Cyanosis	1	3.8

Results on the CXR, ECG and ECHO were shown in table 5.

Cardiomegaly was one of the CXR results that 77% of the patients had. About 23% of the participants reported failed changes. 31% of the patients had no reported alterations. The following ECG abnormalities were found in 27% of cases: LVH, arrhythmias (Atrial fibrillation, 19.2%; premature beats, 7.6%); ischemic changes, 23%; others, 19%; RVH, 7.6%; and LBBB and RBBB, each 3.8%. According to the ECHO findings, 27% of the subjects and 69% of the subjects both had EFs of 40 or lower. About 47% and 31% of people experienced more hypokinesia and chamber enlargement, respectively. Table 6 displays prevalence statistics for congestive heart failure in hospital outpatient departments and community settings. 2% of the participants in medical OPD were found to have heart failure. HF was less than 2% in people aged 25 to 59 and 5.35% in people over 60.

Similar to the Geriatrics OPD, where 5% of patients had HF, the emergency OPD saw 4.5% of patients in the 15- to 59-year-old age range and 27% of patients over the age of 60. In the field survey, 0.5% of people aged 25 to 59 and 1.7% of people over 60 had HF. In senior living facilities, HF was observed to occur 3% of the time.

**Table 5 : Relative frequency and percentage findings on CXR, ECG and ECHO**

Sl. No.	Risk Factor	Number	Percentage
<b>CXR</b>			
1	Cardiomegaly	20	76.9
2	Failure changes	6	23.1

3	No changes	8	30.7
<b>ECG</b>			
1	LVH	7	
2	Arrythmias	7	
	Arterial Fibrillatin	5	
	Premature beats	2	
3	Ischemic changes	6	
4	Others	5	
5	RVH	2	
6	LBBB	1	
7	RBBB	1	
<b>ECHO</b>			
1	EF		
	≥40	18	69.2
	<40	7	26.9
2	Hypokinesia	12	46.9
3	Chamber enlargement	8	30.8

**Table 6 :Data on the prevalence of congestive heart failure in medical OPD and community setting**

Age	Number screened	Heart failure	Percentage
<b>Medical OPD</b>			
25-59	718	12	1.67
≥60	56	3	5.35
Total	774	15	1.91
<b>Geriatric OPD</b>			
≥60	309	15	4.85
<b>Emergency OPD</b>			
25-59	179	8	4.46
≥60	22	6	27.27
Total	201	14	6.96
<b>Field survey data on 150 households</b>			
25-59	389	2	0.51
≥60	59	1	1.69
Total	448	3	0.67
<b>Old age homes</b>			
≥60	63	2	3.17

## DISCUSSION

The goal of the current study was to look at the clinical characteristics of heart failure patients. The results unambiguously show that individuals older than 60 were most at risk for developing HF, and our findings best supported those of the Framingham research [6]. It was discovered that smoking, drinking excessively, having ischemic heart disease, and hypertension were the main risk factors for HF. Despite the fact that the Framingham study's data indicates that systolic arterial hypertension and coronary artery disease (CAD) were the main risk factors for the

development of HF, smoking and drunkenness were more prevalent in our HF patients than hypertension and ischemic heart disease. Firmida, et al.<sup>[7]</sup> and Nogueira, et al.<sup>[5]</sup> also reported on related findings. According to a research by Ferreira, et al.,<sup>[8]</sup> valvular disease, CAD, and HTN were the main risk factors for developing HF. Low pulse pressure was associated with a relative risk of death in HF patients who were decompensated<sup>[9]</sup>. On the other hand, a high pulse pressure might cause anaemia or thyrotoxicosis that goes undiagnosed. Dyspnoea is often accompanied by an increase in respiratory rate (often > 16 breaths/minute), which may indicate the beginning of acute HF decompensation<sup>[10]</sup>. The average respiratory rate in the current sample was determined to be 26.3. According to the ADHERE research and the Euro Heart Failure survey, edoema and dyspnea were the main symptoms patients reported to the hospital with in addition to fluid overload. This confirms that shortness of breath is the primary symptom of heart failure. Breathlessness and weariness, which can happen at rest or after effort, are the two main signs of HF<sup>[10]</sup>. Therefore, explaining the history and physical exam will have a significant impact on determining whether the patient is in the natural history of the illness or needs treatment. The next most frequent symptom was a nonproductive cough, which is an equal to dyspnea and may indicate LVD<sup>[11]</sup>. In the current study, 57.7% of patients had a cough, compared to 69% in the US National Health Interview Survey<sup>[11]</sup>. A significant additional symptom was palpitations. Patients with decompensated HF may present with this symptom. The type of any underlying arrhythmias may be determined from the palpitation's characteristics. Atrial or ventricular complexes that are premature can be suspected when there are pauses and skipped or erratic beats. Rapid palpitations can be erratic, like those caused by atrial arrhythmias such atrial flutter, fibrillation, or tachycardia, or constant, like those caused by sinus supraventricular or ventricular tachycardia. Arrhythmias are well-known to cause HF (particularly AF), and in the current study, 26.9% of patients had arrhythmias, whereas 19.2% of patients had AF. 34 % of the individuals in the current study reported experiencing chest pain. Another prominent complaint among HF patients was fatigue.

In a study by Evangelesta, et al.<sup>[12]</sup>, they found that 51.2% of women and 50.4% of men who had heart failure also reported feeling tired. The initial evaluation of patients must include a heart rate measurement since bradycardia or tachycardia may be the cause of decompensation. However, tachycardia is thought to be too insensitive to be of any utility as a predictor<sup>[13]</sup>. The intensity of the pulse is crucial for determining the appropriateness of cardiac output. Mechanical alternans, a change in the pulse's strength from strong to weak, has been found to be frequent in HF and to be related to aberrant cardiac structure and function. Peripheral pulse inequality may provide a hint as to the presence of CAD. In the current study, 57.7% of patients had tachycardia as determined by physical examination. Edema is too insensitive, according to Watson, et al.<sup>[13]</sup>, to have any practical prognostic value. Edema was reported by all of the study participants. JVP, which has a high specificity, is the most helpful physical finding for identifying decompensated HF. Increased JVP is unrelatedly linked to unfavourable outcomes, such as the progression of HF as seen in the current study<sup>[14]</sup>. According to the findings of the current investigation, Francis<sup>[15]</sup> study noted a third heart sound in individuals with severe heart failure. In our patients, the cardiothoracic ratio was further elevated. A full, healthy ECG has a strong (> 90%) negative predictive value for heart failure<sup>[16]</sup>. 19.2% of patients in the current study had AF, compared to 10% of patients in the Euro Heart Failure Survey<sup>[14]</sup>, and the findings were consistent with the CHARM trials<sup>[17]</sup>. ECHO evidence of LVH will continue to be a reliable indicator of unfavourable outcomes. As a result, a pattern of signs and symptoms as well as a profile of investigations can be identified in HF patients. The research population's reported anthropometry data is consistent with that of other population groups<sup>[18]</sup>.

**CONCLUSION**

This study offers a fairly thorough clinical profile of the heart failure patients. Apart from smoking and drunkenness, ischemic heart disease and hypertension are the main risk factors, and the treatment of concomitant illnesses may have a significant impact on clinical care.

**REFERENCES**

1. Drazner MH., *et al.* "Prognostic importance of elevated jugular venous pressure and a third heart sound in patients with heart failure". *New England Journal of Medicine* 345.8 (2001):574-581.
2. Evangelista LS.,*et al.* "Correlates of Fatigue in Patients With Heart Failure". *Progress in Cardiovascular Nursing* 23.1 (2008): 12-17.
3. Ferreira A., *et al.* "Epidemiologic features of congestive heart failure. Retrospective analysis of 2561 hospitalizations". *Revista Portuguesa de Cardiologia*15.5 (1996): 395-410.
4. Firmida CC and Mesquita ET. "O paradoxo do tratamento da ICC com betabloqueadores: implicaçõesparapacienteshipertensos". *RevistaBrasileira De Hipertensão*8.4 (2001): 458-465.
5. Francis GS. "Pathophysiology of chronic heart failure". *American Journal of Medicine* 110.7A (2001): 37S-46S.
6. Hanyu Ni. "Prevalence of Self-Reported Heart Failure Among US Adults: Results from the 1999 National Health Interview Survey". *American Heart Journal* 146.1 (2003): 121-128.
7. Hawkins NM., *et al.* "Prevalence and prognostic implications of electrocardiographic left ventricular hypertrophy in heart failure: evidence from the CHARM programme". *Heart* 93.1 (2007): 59-64.
8. Ho KKL., *et al.* "The epidemiology of heart failure: the Framingham study". *Journal of the American College of Cardiology* 22.4A (1993): 6A-13A.
9. Hummel A., *et al.* "De Novo Acute Heart Failure and Acutely Decompensated Chronic Heart Failure". *DeutschesÄrzteblattInternational* 112.17 (2015): 298-310.
10. Hunt SA., *et al.* "2009 focused update incorporated into the ACC/AHA 2005 Guidelines for the Diagnosis and Management of Heart Failure in Adults: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines: developed in collaboration with the International Society for Heart and Lung Transplantation". *Circulation* 119.14 (2009): e391-e479.
11. Masoudi FA., *et al.* "The burden of chronic congestive heart failure in older persons: magnitude and implications for policy and research". *Heart Failure Reviews* 7.1 (2002): 9-16.
12. Nogueira PR., *et al.* "Epidemiological, clinical and therapeutic profile of heart failure in tertiary hospital". *ArquivosBrasileiros de Cardiologia*95.3 (2010): 392-398.
13. Petrie CJ., *et al.* "Low pulse pressure as a poor-man's indicator of a low cardiac index in patients with severe cardiac dysfunction". *Journal of Cardiovascular Medicine* 15.4 (2014): 315-321.
14. Reddy TM.,*et al.* "Metabolic Profile and Body Fat Distribution in Diabetic Hypertensives and Normotensives". *Journal of Life Science* 5.1 (2013): 23-28.

15. Remme WJ and Swedberg K. "Guidelines for the diagnosis and treatment of chronic heart failure". *European Heart Journal* 22.17 (2001): 1527-1560.
16. Schocken DD., *et al.* "Prevalence and mortality rate of congestive heart failure in the United States". *Journal of the American College of Cardiology* 20.2 (1992): 301-306.
17. Vasan R and Levy D. "Defining diastolic heart failure. A call for standardized diagnostic criteria". *Circulation* 101.17 (2000): 2118-2121.
18. Watson RD., *et al.* "ABC of heart failure. Clinical features and complications". *British Medical Journal* 320.7229 (2000): 236-239.

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