



A CROSS-SECTIONAL PROSPECTIVE STUDY TO ASSESS THE COMORBIDITIES IN CONGESTIVE CARDIAC FAILURE

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ABSTRACT

Background: Congestive cardiac failure (CCF) is a complex clinical syndrome of multiple symptoms, functional impairments, and poor health-related quality of life (HRQoL). CCF patients are usually older and with a high number of comorbidities. Persisting symptoms and poor HRQoL after optimisation of CCF treatments suggest that comorbidities may be an important determinant of health and that non-cardiovascular comorbidities may be associated with CCF related symptoms. **Method:** This six month cross sectional descriptive study was conducted in 150 patients after obtaining approval from the Institutional Ethical Committee, MIMS, Mandya. The records of adults (>18 years) who are admitted with congestive cardiac failure to the ICU and MICU of Mandya Institute of Medical Science (MIMS) and Teaching Hospital, Mandya were studied and analysed using suitable statistical methods. **Results:** Our study found that there were more patients with 1-3 comorbidities and comorbidities present were ischaemic heart disease (48%), hypertension (44%), diabetes mellitus (20%), anaemia (16%), chronic obstructive pulmonary disease (16%), cardiomyopathy (12%), acute coronary syndrome (10%), angina (6%), myocardial infarction (6%), cor pulmonale (6%), kidney failure (6%), cerebrovascular accident (4%), liver abnormalities (4%), hypernatremia (4%), asthma (4%) and respiratory failure (4%), Eisenmenger syndrome (2%), dyslipidaemia (2%), pleural effusion (2%), hypoglycaemia (2%), hypoproteinaemia (2%), acute gastritis (2%) and neck of femur (2%). Our study indicates that there were more male patients who had comorbidities with CCF compared to female patients. **Conclusion:** There were more patients with 1-3 comorbidities and the most common comorbidities were ischaemic heart disease, hypertension, diabetes mellitus, anaemia, chronic obstructive pulmonary disease, cardiomyopathy and acute coronary syndrome. Our study indicates that more male patients had comorbidities than female patients.

KEYWORDS: Congestive cardiac failure, comorbidity, ischaemic heart disease, hypertension.

INTRODUCTION

Congestive cardiac failure (CCF) is a complex clinical syndrome of multiple symptoms, functional impairments and poor health-related quality of life (HRQoL). With modern therapies, CCF patients are now living longer but with a potentially higher symptom burden,^[1] that can be worse compared to people with other chronic diseases including cancer.^[2] Inadequate symptom control and poor HRQoL are significant drivers of hospitalisations, readmissions, and death in CCF.^[3,4] CCF patients are usually older, with a high number of comorbidities, and a third of patients report that other medical conditions dominate their health experience,^[5] yet guideline-driven symptom management in CCF focuses on cardiovascular

status.^[6] Persisting symptoms and poor HRQoL after optimisation of CCF treatments,^[7] suggest that comorbidities may be an important determinant of health and that non-cardiovascular comorbidities may be associated with CCF related symptoms.^[8] However, the evidence is inconsistent, with some CCF studies showing associations between comorbidities and HRQoL.^[9-11] and others showing no such associations.^[12,13] Whilst comorbidities are consistent predictors of morbidity and mortality in HF,^[14] their interrelationships with symptoms, functional limitations, and overall health have not been explored.

METHODOLOGY

Study population

The study was conducted in 150 patients who have congestive cardiac failure and were admitted in ICU and MICU of Mandya Institute of Medical Science (MIMS) and Teaching Hospital, Mandya which is a 650 bedded hospital.

Study method

This was a six months cross sectional descriptive study in which the data were collected from the patient's case records. The study was approved by Institutional Ethical Committee, MIMS, Mandya. The records of adults (>18 years) who are admitted with congestive cardiac failure to ICU and MICU of MIMS were chosen for the study and the records of patients whose diagnosis was not certain; pregnant or lactating females and patients less than 18 years were excluded from the study.

Statistical analysis: Descriptive analysis was used to analyse the data. MS Excel and MS Word were used for analysing the data. Qualitative variables were expressed as mean standard deviation and percentage.

RESULTS

Among the 150 patients of congestive cardiac failure studied, 87 (58%) were males and 63 (42%) were females for which the mean age was found to be 65.08 ± 14.11 years.

Table 1: Distribution based on gender of patients.

Gender	No. of Patients	Percentage of Patients (%)
Male	87	58
Female	63	42

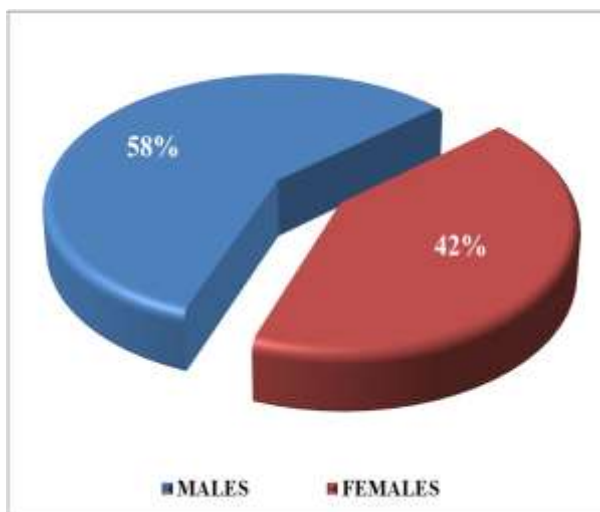


Figure 1: Gender wise categorization of patients.

The total population when classified into 3 categories of age group, 6 (4%) patients fell into class A, 45 (30%) belonged to class B and 99 (66%) were in class C.

Table 2: Distribution based on age of patients.

Class	Age Group (Years)	No. of Patients	Percentage of Patients (%)
A	18-40	6	4
B	40-65	45	30
C	≥ 65	99	66

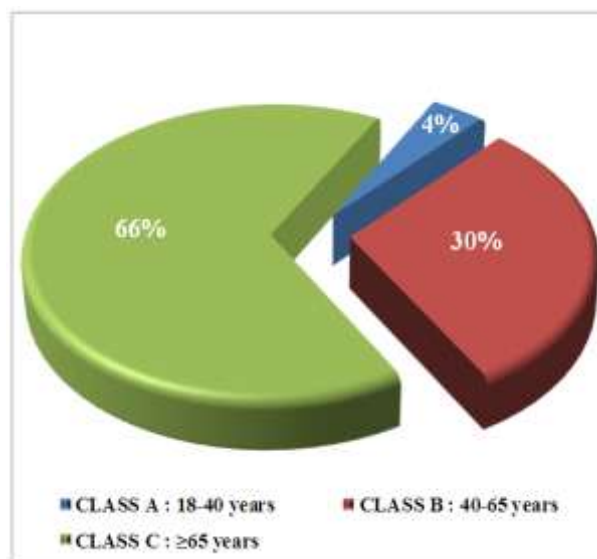


Figure 2: Age wise categorization of patients.

Patient Distribution Based on Comorbidities

Based on the number of comorbidities seen, the study population was classified into 5 categories which included 3 patients (2%) in category I, 54 patients (36%) in category II, 30 patients (20%) in category III, 45 patients (30%) in category IV and 18 patients (12%) in category V.

Table 3: Distribution of patients based on the number of comorbidities.

Category	No. of comorbidities in patients	No. of patients	Percentage of patients (%)
I	0	3	2
II	1	54	36
III	2	30	20
IV	3	45	30
V	>3	18	12

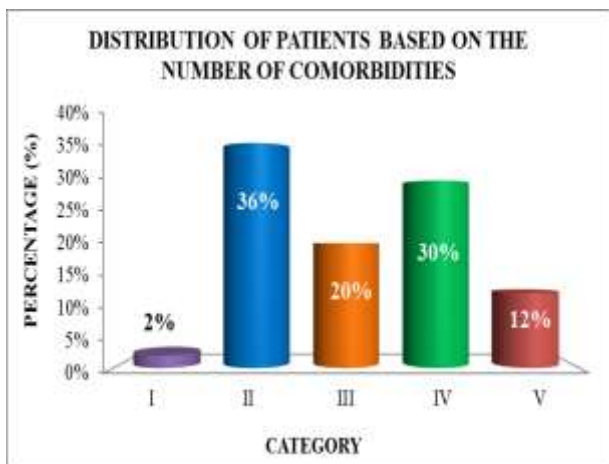


Figure 3: Distribution of patients based on comorbidities

Distribution of Various Comorbidities In Patients

Among the population studied the major comorbidities were ischaemic heart disease (48%), followed by hypertension (44%), diabetes mellitus (20%), anaemia (16%) and chronic obstructive pulmonary disease (16%), cardiomyopathy (12%), acute coronary syndrome (10%) followed by angina, myocardial infarction, corpulmonale and kidney failure which were seen in 6% of the patients, cerebrovascular accident, liver abnormalities, hypernatremia, asthma and respiratory failure which accounted for 4% of the patients and Eisenmenger

syndrome, dyslipidaemia, pleural effusion, hypoglycaemia, hypoproteinaemia, acute gastritis and neck of femur which accounted for 2% of them.

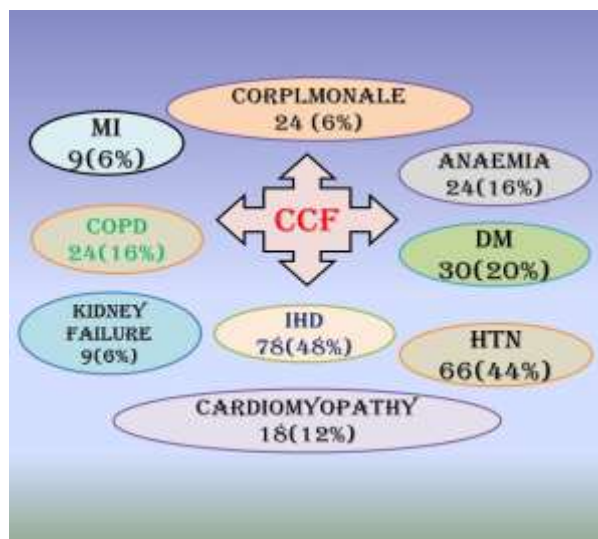


Figure 4: Distribution of various comorbidities in patients (CCF – congestive cardiac failure, COPD – chronic obstructive pulmonary disorder, DM – diabetes mellitus, IHD – ischaemic heart disease, HTN – hypertension).

Table 4: Distribution of various comorbidities in patients.

Comorbidity	No. of patients	Percentage of Patients (%)
Ischaemic heart disease	72	48
Hypertension	66	44
Diabetes mellitus	30	20
Anaemia	24	16
Chronic obstructive pulmonary disease	24	16
Cardiomyopathy	18	12
Acute coronary syndrome	15	10
Angina	9	6
Myocardial infarction	9	6
Corpulmonale	9	6
Kidney failure	9	6
Cerebrovascular accident	6	4
Liver abnormalities	6	4
Hypernatremia	6	4
Asthma	6	4
Respiratory failure	6	4
Eisenmenger syndrome	3	2
Dyslipidaemia	3	2
Pleural effusion	3	2
Hypoglycaemia	3	2
Hypoproteinaemia	3	2
Acute gastritis	3	2
Neck of femur	3	2

Gender Wise Categorization of Comorbidities

When the comorbidities were dealt in detail with its occurrence in male and female patients, the result in

table 5 was obtained and it was observed that more male patients developed comorbidities than female patients.

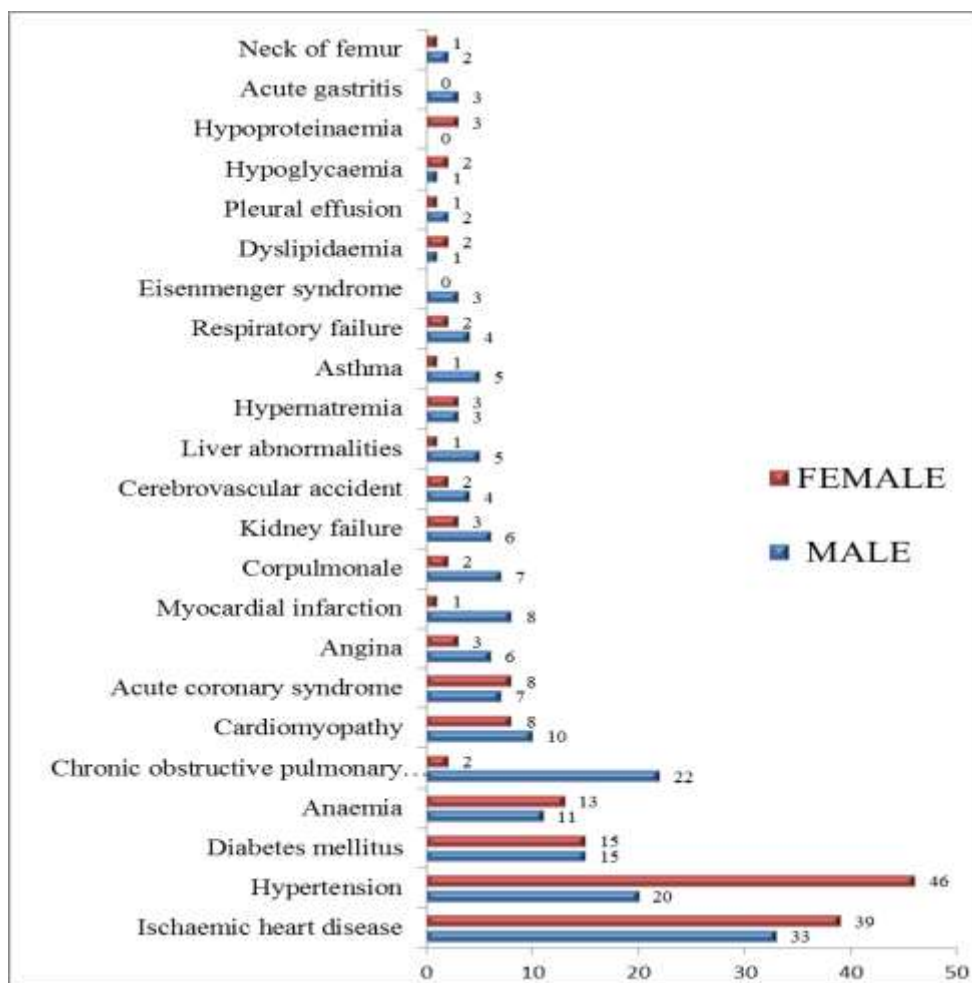


Figure 5: Classification of comorbidities in males and females.

Table 5: Classification of comorbidities in males and females.

Comorbidity	No. of male patients	No. of female patients
Ischaemic heart disease	33 (45.8%)	39 (54.2%)
Hypertension	20 (30.3%)	46 (69.7%)
Diabetes mellitus	15 (50.0%)	15 (50.0%)
Anaemia	11 (45.8%)	13 (54.2%)
Chronic obstructive pulmonary disease	22 (91.7%)	2 (8.3%)
Cardiomyopathy	10 (55.6%)	8 (44.4%)
Acute coronary syndrome	7 (46.7%)	8 (53.3%)
Angina	6 (66.7%)	3 (33.3%)
Myocardial infarction	8 (88.9%)	1 (11.1%)
Corpulmonale	7 (77.8%)	2 (22.2%)
Kidney failure	6 (66.7%)	3 (33.3%)
Cerebrovascular accident	4 (66.7%)	2 (33.3%)
Liver abnormalities	5 (83.3%)	1 (16.7%)
Hypernatremia	3 (50.0%)	3 (50.0%)
Asthma	5 (83.3%)	1 (16.7%)
Respiratory failure	4 (66.7%)	2 (33.3%)
Eisenmenger syndrome	3 (100.0%)	0 (0.0%)
Dyslipidaemia	1 (33.3%)	2 (66.7%)
Pleural effusion	2 (66.7%)	1 (33.3%)
Hypoglycaemia	1 (33.3%)	2 (33.3%)
Hypoproteinaemia	0 (0.0%)	3 (100.0%)
Acute gastritis	3 (100.0%)	0 (0.0%)
Neck of femur	2 (66.7%)	1 (33.3%)

DISCUSSION

The records of 150 patients with congestive cardiac failure based on the inclusion criteria in the General Medicine Department of the MIMS were analysed and the mean age was found to be 65.08 ± 14.11 years. Majority of them were male patients i.e. 87 numbers (58%) while the remaining 63 (42%) were female patients.

The population was classified into three classes based on the patients age as class A, class B, class C which represented the age groups 18-40 years, 40-65 years and ≥ 65 years respectively. 6 (4%) patients fell into class A, 45 (30%) into class B and 99 (66%) were found to fall into class C.

Further, the study population was categorized based on the number of comorbidities seen into category I, II, III, IV and V which denoted patients with no comorbidity, patients with 1 comorbidity, 2 comorbidities, 3 comorbidities and >3 comorbidities respectively. Majority of the patients belonged to category II [54 patients (36%)] followed by category IV [45 patients (30%)], category III [30 patients (20%)] and category V [18 patients (12%)]. There were very less patients [18 patients (12%)] who belonged to category I.

Among the population studied the major comorbidity was ischaemic heart disease (48%), followed by hypertension (44%), diabetes mellitus (20%). The other comorbidities were anaemia (16%) and chronic obstructive pulmonary disease (16%), cardiomyopathy (12%), acute coronary syndrome (10%) followed by angina, myocardial infarction, cor pulmonale and kidney failure which were seen in 6% of the patients, cerebrovascular accident, liver abnormalities, hypernatremia, asthma and respiratory failure which accounted for 4% of the patients and Eisenmenger syndrome, dyslipidaemia, pleural effusion, hypoglycaemia, hypoproteinaemia, acute gastritis and neck of femur which accounted for 2% of them.

Our findings shows agreement to the results of the study conducted by Claire A. Lawson *et al.* in terms of the major comorbidities [ischaemic heart disease (54%), hypertension (52%), diabetes mellitus (24%)] except atrial fibrillation which accounted for 48% of their study population.^[15]

When the comorbidities were dealt in detail with its occurrence in male and female patients, it was observed that more male patients developed comorbidities than female patients.

CONCLUSION

Our findings concludes that congestive cardiac failure is mostly seen in males and the age group in which it is mostly found is ≥ 65 years and it is least in the age group of 18-40 years. There were more patients with 1-3

comorbidities and the most common comorbidities were ischaemic heart disease, hypertension, diabetes mellitus, anaemia, chronic obstructive pulmonary disease, cardiomyopathy and acute coronary syndrome. Our study indicates that more male patients had comorbidities than female patients.

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