



ORIGINAL ARTICLE

Clinico-Demographic Study of Chronic Renal Disease Patients Presenting with Congestive Cardiac Failure at a Tertiary Level of Hospital in Dhaka City

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Abstract

Background: Heart failure (HF) is a major public health issue, and it is associated with a high rate of mortality, morbidity, **Objective:** The purpose of the present study was to assess the demographic and clinical characteristics of the chronic renal disease patient with congestive cardiac failure (CCF). **Methodology:** This cross-sectional study was carried out in the Department of Medicine and Department of Cardiology in Dhaka Medical College Hospital, Dhaka, Bangladesh for six months after approval of the protocol on patients suffering from CCF. Study population was selected in the study group based on age more than 18 years of both sex and diagnosed case of CCF. **Results:** A total 100 patients were included and among them majority of the patients were aged between 51 to 60 years (32.0%). Among them 70.0% cases were male and 30.0% cases were female. About 58.0% cases were living in rural area and 46.0% cases of total subjects had a family income of 20,000-40,000 BDT. Co-morbidities of CCF patients of the study population showed that 53% had hypertension, 48% had ischemic heart disease, 34% had DM, 20.0% had dyslipidaemia, 16% had anaemia, 14.0% had asthma or COPD and rest 8% had history of atrial fibrillation. About 100.0% patients had shortness of breath along with 92.0% bilateral basal crepitation on auscultation; 80.0% had orthopnoea and 66.0% had raised JVP with 64.0% bilateral ankle edema. **Conclusion:** In conclusion males with hypertension and sedentary life style suffer from kidney diseases. [Journal of Current and Advance Medical Research, January 2022;9(1):21-25]

Keywords: CCF; Congestive heart failure; AKI; acute kidney injury; CKD; chronic kidney disease

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Introduction

Heart failure (HF) is associated with high morbidity and mortality, and accounts for more than 1 million primary and about 3,000,000 secondary annual hospital admissions in the USA alone, and it is the most common hospital discharge diagnosis among subjects older than 65 years¹⁻³. Subjects with congestive heart failure (CHF) usually show acid-base and electrolyte disorders, due both to the activation of several neurohumoral mechanisms and to drugs used in this condition, such as diuretics. These abnormalities reflect the severity of CHF and contribute to the functional impairment and to the poor long-term prognosis¹.

Heart diseases in the United States cost the healthcare system approximately \$30.7 billion annually. It has an estimated prevalence of 6.2 million cases in the United States alone. The average incidence of hospitalized HF for those aged ≥ 55 years is 11.6 per 1000 people per year; incidence of recurrent hospitalized HF is 6.6 per 1000 people per year. It is also responsible for 300,000 deaths per year globally. About 50% of patients with HF also have concomitant chronic kidney disease (CKD). Those patients have been found to have an increased risk of mortality and morbidity. This risk increases as glomerular filtration rate (GFR) decreases. According to the NHLBI's ARIC Study, HF is associated with a 30-day mortality of 10.4%, one-year mortality of 22.0%, and a five-year mortality of 42.3% despite the advances in treatment and management².

Acute Decompensated Heart Failure National Registry (ADHERE) study reported that patients with HF have coronary artery disease, hypertension, diabetes, and kidney disease in 57%, 73%, 44%, and 60% of the cases, respectively^{3,4}. The purpose of the present study was to assess the demographic and clinical characteristics of the chronic renal disease patient with CCF.

Methodology

Study Population and Settings: This was a Cross-sectional study on total 100-study population at Department of Medicine and Department of Cardiology in Dhaka Medical College Hospital for six months after approval of the protocol on patients suffering from CCF. Study population were selected in the study group whose age more than 18 years of both sex and diagnosed case of CCF and willing to participate. Study population was

excluded who were severely ill, known case of CKD and not willing to participate.

Study Procedure: All patients were subjected to detailed history, clinical examination and relevant investigation. Face to face interview was conducted by using a semi-structured questionnaire containing socio-demographic parameters and clinical presentations. Diagnosis, clinical sign and investigation profiles were collected from patient registry file.

Statistical Analysis: After collection of all the required data, these were checked, verified for consistency and tabulated using the SPSS/PC 23 software. Statistical significance is set as 95% confidence level at 5% acceptable error level. Data were presented as the proportion of valid cases for discrete variables and as means \pm standard deviations and/or medians for continuous variables. Differences in baseline characteristics were compared using either the unpaired t test and the Pearson chi square test. Results will be presented with a 95% confidence interval (95% CI). A p value of <0.05 was considered significant.

Ethical issue: This study was approved by the local institutional review board (IRB) of Dhaka Medical College. After selecting the patients, informed written consent was taken from the subjects following describing the purpose, methods, benefits and hazards of study.

Results

A total number 100 patient of congestive cardiac failure were included in this study. Mean age was 53.88 ± 14.6 years. Maximum and minimum age was 87 years and 25 years respectively. Majority of the patients were aged between 51-60 years (32.0%) (Figure I).

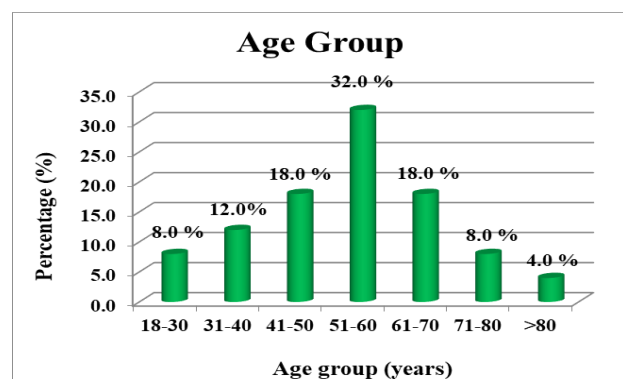


Figure I: Age distribution of patients with congestive cardiac failure (n=100)

Among all subjects, 70.0% cases were male and 30.0% cases were female. The male and female ratio was 2.33:1 (Figure II).

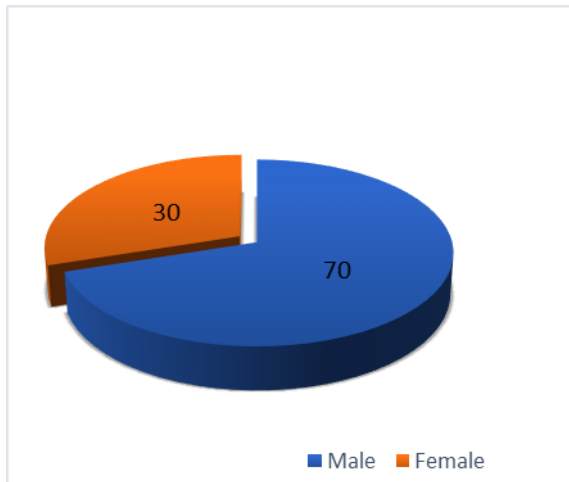


Figure II: Male & female congestive cardiac failure patients in the study (n=100)

Among all patients, about 58% are living in rural area, 46% of total subjects have a family income of 20,000-40,000 BDT and 28% of total population does business. Regarding education, maximum 30% have studied up to HSC (Table 1).

Table 1: Other Socio-demographic Characteristics of Study Population (n= 100)

Variables	Frequency	Percent
Residence		
• Urban	42	42.0
• Rural	58	58.0
Monthly Family Income		
• <10,000 BDT	12	12.0
• 10,000-20,000 BDT	30	30.0
• 20,000-40,000 BDT	46	46.0
• >40,000 BDT	12	12.0
Occupation		
• Govt. employee	16	16.0
• Non-govt. employee	20	20.0
• Business	28	28.0
• Housewife	14	14.0
• Unemployed	22	22.0
Education		
• Illiterate	2	2.0
• Primary	16	16.0

• Below SSC	14	14.0
• SSC	20	20.0
• HSC	30	30.0
• Graduate and above	18	18.0

Co-morbidities of CCF patients of our study population showed that 53% had hypertension, 48% had ischemic heart disease, 34% had DM, 20% had dyslipidaemia, 16% had anaemia, 14% had asthma/COPD and rest 8% had history of atrial fibrillation. Regarding personal habits of study population, 72% of total patients had history of smoking and 20% were alcoholic. 41% patients lead a sedentary lifestyle. Clinical signs of congestive cardiac failure showed in that 100% patients had shortness of breath along with 92% had bilateral basal crepitation on auscultation, 80% had orthopnoea, 66% had raised JVP, 64% had bilateral ankle edema, 54% had paroxysmal nocturnal dyspnoea and only 10% had oliguria (Table 2).

Table 2: Personal habits in CCF patients of study population (n=100)

Personal habit	Frequency	Percent
• Smoking	72	72.0
• Alcohol	20	20.0
• Sedentary lifestyle	41	41.0
Co-morbidities		
• Hypertension	53	53.0
• Ischemic Heart Disease	48	48.0
• Diabetes mellitus	34	34.0
• Dyslipidaemia	20	20.0
• Anaemia	16	16.0
• Asthma/ COPD	14	14.0
• Atrial fibrillation	8	8.0
Important Clinical signs		
• Shortness of breath	100	100.0
• Bilateral basal crepitation	92	92.0
• Orthopnoea	80	80.0
• Raised JVP	66	66.0
• Ankle edema	64	64.0
• Paroxysmal nocturnal dyspnoea	54	54.0
• Anaemia	16	16.0
• Oliguria	10	10.0

Discussion

Bangladesh is passing through an epidemiological transition. Burden of infectious diseases are coming down while with increased life expectancy and

wide spread change of lifestyle, non-communicable diseases are on the rise⁵. Cardiovascular diseases are one of the main causes of morbidity and mortality in this country now. Congestive cardiac failure (CCF) is a significant and growing health problem as the population ages. Despite the significant advances in therapies and prevention, mortality and morbidity are still high and quality of life poor⁶. In the United Kingdom, most patients admitted to hospital with CCF are more than 65 years old and remain inpatients for a week or more.

Cardiac failure is frequently due to coronary artery disease, tends to affect elderly people and often leads to prolonged disability. Although the outlook depends to some extent on the underlying cause of the problem, heart failure carries a very poor prognosis; approximately 50% of patients with severe CCF due to severe left ventricular dysfunction will die within 2 year⁷. Hospitalized heart failure is regarded as prognostically more adverse with a high mortality and readmission rate. However, there is a paucity of data on outcomes of heart failure in particular in Indo-Asians⁸. Renal dysfunction is common in patients with heart failure and is associated with high morbidity and mortality. Cardiac and renal dysfunction may worsen each other through multiple mechanisms such as fluid overload and increased venous pressure, hypoperfusion, neuro-hormonal and inflammatory activation, and concomitant treatment. The interaction between cardiac and renal dysfunction may be critical for disease progression and prognosis⁹.

Total 100 patients with congestive cardiac failure (CCF) were included. Among them mean age was 53.88 ± 14.6 years. Maximum and minimum age was 87 years and 25 years respectively. Majority of the patients were aged between 51-60 years (32.0%) followed by 18% in 41-50 years and another 18% in 61-70 years both of which were second highest. Kabiruzzaman et al¹⁰ in Bangladesh found the mean age was 54.1 ± 15.3 years with majority (30.7%) patients in 51-60 years group¹⁰. Abedin et al¹¹ also found similar result but Rahaman et al¹⁸ found mean age 46 ± 7 years with majority (75%) patients in 51-70 years group.

Sex distribution of patients was slightly in favour of males (70%) than female (30%) with male female ratio 2.33:1. Kabiruzzaman et al¹⁰, Abedin et al¹¹ and Araújo et al¹² also got similar result with male predominance¹⁰⁻¹². Among all patients, about 58.0% are living in rural area and 42.0% in urban area. Abedin et al¹¹ found 41.0% of patients with heart failure living in city and rest in village or upazilla

level in Bangladesh which is almost similar to our study.

Most of the patients (46.0%) of total patients have a family income of 20,000 to 40,000 BDT, 30.0% had family income of 10,000 to 20,000 BDT, 12.0% had less than 10,000 BDT and rest 12.0% had more than 40,000 BDT. Abedin et al¹¹ found in his study in Bangladesh, most of the patients (62.0%) belonged to middle income group (11500 to 200000 TK) family. Rest (38.0%) belonged to lower income group (<11500Tk) and none of them from upper income group (more than 200000Tk)¹¹. Philbin et al¹³ found that patients with lower income had frequent hospitalization. Generally, the income is introduced as a predictor factor of readmission in these patients which is consistent with the results of this study¹³.

Among the study population, maximum 30.0% have studied up to HSC, 20.0% up to SSC, 18.0% were graduate and above, 16.0% passed primary, 14.0% were below SSC and rest 2.0% were illiterate. Araújo et al¹² found 8.7% patients were illiterate, 60.9% completed fundamental study that means completed HSC. Barasa et al¹⁴ found majority (15.0%) of the patients had no formal education, 56.7% and 24.6% had attained primary and secondary education respectively and only 3.5% of them had attained post-secondary education.

In the present study, as a co-morbid condition, 53.0% had history of hypertension, 48.0% had ischemic heart disease, 34.0% had DM, 20.0% had dyslipidaemia, 16.0% had anaemia, 14.0% had asthma or COPD and rest 8.0% had history of atrial fibrillation. In the study of Rahman et al¹⁸ found similar result as hypertension (45.0%), diabetes (29.0%), respiratory disease (27.0%) and atrial fibrillation in 9.0% cases. In SOLVD clinical trial¹⁵, 42.0% had hypertension, 26.0% cases had diabetes, 10.0% cases had atrial fibrillation and in MERIT-HF clinical trial¹⁶, 44.0% had hypertension, 25.0% had diabetes and 17.0% had atrial fibrillation. Regarding personal habits of study population, 72.0% of total patients were smoker and only 20.0% were alcoholic and 41.0% patient leads a sedentary lifestyle. Noori et al¹⁷ found 55.0% cases were current smoker among readmission population which was similar to our study.

In this study, 100% patients presented with shortness of breath, 92% had bilateral basal crepitation on auscultation, 80% had orthopnoea, 66% had raised JVP, 64% had bilateral ankle edema, 54% had paroxysmal nocturnal dyspnoea and only 10% had oliguria. Rahman et al¹⁸ and

Barasa et al¹⁴ also found same result. In the present study, mean pulse rate was 83.6 ± 8.7 bpm, mean systolic BP was 111.2 ± 10 mmHg and diastolic BP was 74.5 ± 7.7 mmHg. Dokainish et al¹⁹ found regarding clinical characteristics, systolic blood pressure 125 ± 22 mmHg, diastolic blood pressure 76 ± 13 mmHg and heart rate 81 ± 17 bpm which is very much similar to us¹⁹. Tsutsui et al²⁰ also found similar result as heart rate 70.5 ± 12.0 bpm, systolic blood pressure 117.0 ± 18.6 mmHg and diastolic blood pressure 66.1 ± 11.6 mmHg.

Conclusion

In conclusion majority patients are male businessman with hypertension with smoking and other habits leads to suffer from congestive heart failure. Co-morbidities of CCF patients of this study population are mainly hypertension, ischemic heart disease, DM, dyslipidaemia, anaemia, asthma/COPD and history of atrial fibrillation. Regarding personal habits of study population, history of smoking and alcoholic are the main complain. Most of the patients lead a sedentary lifestyle. Clinical signs of congestive cardiac failure have showed shortness of breath along with bilateral basal crepitation on auscultation, orthopnoea, raised JVP, bilateral ankle edema, paroxysmal nocturnal dyspnoea and oliguria. Further large scale study should be conducted.

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