

Clinical and Socio Demographic Aspects of Congestive Heart Failure Patients

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Abstract

Background: Congestive heart failure (CHF) is a growing issue for healthcare systems throughout the developing world. Many factors have been linked to an increase in mortality in CHF patients. Despite heterogeneity in the research groups, several demographic and clinical variables appear to be consistently associated with a poor prognosis in congestive heart failure patients.

Objective: To investigate the clinical and sociodemographic aspects of congestive heart failure patients.

Methods: This descriptive observational study was conducted by the Department of Medicine at 100-bed district hospital, Narsingdi from July 2021 to June 2022. Purposive sampling was used to select 120 women and men with congestive heart failure from the cardiac center of 100-bed district hospital, Narsingdi, Bangladesh. Daily consecutive admissions were screened to identify eligible patients who arrived in the cardiac emergency room, Department of Cardiology. Patients with an admission diagnosis of congestive heart failure were enrolled in this study on the basis of inclusion and exclusion criteria with a history of at least one well documented hospitalization for congestive heart failure.

Results: Rheumatic heart disease was identified in 38(31.7%), cardiomyopathy was found in 30(25.0%), hypertension was found in 21(17.5%) cases, pericardial disease was found in 16(13.3%), and ischaemic heart disease was found in 3(2.5%). Factors related with congestive heart failure were 25 (20.8%) inadequate therapy, 25 (20.8%) arrhythmia, 23 (19.2%) respiratory diseases, 17 (14.2%) anaemia, and 23 (19.2%) infective endocarditis. The majority of patients (75.5%) had NYHA class II, 38.7% had class III, and 5.8% had class IV. In conjunction with medical and demographic characteristics, major socio-environmental factors increased the likelihood of readmission due to congestive heart failure.

Conclusion: Socio-environmental factors may increase risk of hospital admission in heart failure patients.

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Introduction

Heart failure (HF) is a severe condition affecting many people throughout the world and is the most frequent reason for hospitalization in the ageing population. HF is a chronic disease and is particularly common in high-income countries.¹ Heart failure (HF) is a clinical syndrome that commonly occurs due to a structural or functional impairment of the heart.² Heart failure (HF) turns into a typical cardiovascular condition whose occurrence and predominance is increasing. Being a typical cause for urgent hospital admission, it is a noteworthy cause for morbidity and mortality for patients with congestive heart failure (CHF).³ Depression, which is common in patients with HF, has been correlated with an increased number of physical symptoms and increased severity of symptoms.^{4,5} In addition, patients are often on strict low-sodium diets and may also have physical restrictions due to symptoms such as dyspnea and fatigue, all of which can be socially isolating.⁶ Fifty-five percent of Medicare patients with HF were found to have more than 5 chronic comorbidities, and such patients were responsible for more than 80% of hospitalization days of all patients with HF.⁷ The most common comorbidities reported in patients with HF are chronic kidney disease, anemia, diabetes, and chronic obstructive pulmonary disease (COPD).⁸ Besides medical factors, other previous studies had documented that the Socio-economic Status (SES) of CHF patients was a crucial indicator, which might influence the patient's behavioral pattern, environmental exposures, and access to healthcare services.⁹

Objective

The result of this study will provide the evidences for better understanding of association of socio-economical characteristics and readmission due to CHF in Bangladeshi patients.

Methods

This descriptive observational study was carried out in Department of Medicine at 100 bedded district hospital, Narsingdi. The study period was from July 2021 to June 2022. One hundred twenty women and men with congestive heart failure in cardiac center of 100 bedded district hospital, Narsingdi, Bangladesh were selected with purposive sampling. Consecutive admissions were screened daily to identify eligible patients who arrived in cardiac emergency room, Department of Cardiology having an admission diagnosis of congestive heart failure and was enrolled in this study on the basis of inclusion and exclusion criteria with history of at least one well documented hospitalization for congestive heart failure. All essential data on the patients were recorded in a designed checklist. Data were collected through a face-to-face interview with the patients and their attendants and from patients' hospital files classified into three categories including demographic information, potential confounding variables, and information about the patients' socio-economic status. All the data was checked and edited after collection. Continuous variable was expressed as Mean \pm Standard Deviation. Categorical variable was presented by frequency, and percentage. Statistical analysis was done using SPSS (Statistical package for social sciences) with version 23 software programme.

Results

In this study majority 45(37.5%) patients belonged to age 41-50 years, the mean age was found 53.2 \pm 15.4 years. Male was predominant (62.5%), male: female ratio was 1.7:1. Majority patients were married (95.8%). More than three fourth (79.2%) patients came from urban area. Most of the patients completed primary education level (39.2%). Almost one third (31.7%) patients were service holder. One third (33.3%) of the patients came from lower middle income group family (Table-I).

Table 1: Socio-demographic characteristics of the study patients(n=120)

Parameters	Frequency	Percentage
Age group (years)		
<30	8	6.7
31-40	22	18.3
41-50	45	37.5
51-60	28	23.3
61-70	11	9.2
>70	6	5.0
Mean±SD	53.2±15.4	
Sex		
Male	75	62.5
Female	45	37.5
Marital status		
Single	5	4.2
Married	115	95.8
Residence		
Urban	95	79.2
Rural	25	20.8
Educational status		
Illiterate	21	17.5
Primary	47	39.2
SSC	27	22.5
HSC	13	10.8
Graduate or above	12	10.0
Occupational status		
Housewife	35	29.2
Businessman	25	20.8
Service holder	38	31.7
Others	22	18.3
Socio-economic status		
Lower	23	39.2
Lower middle	47	33.3
Upper middle	40	8.3
High	10	6.7

Majority 47(39.2%) patients were normal body weight and 40(33.3%) were obese. The mean BMI was found $22.16 \pm 5.43 \text{ kg/m}^2$ (Table II).

Table II: Body mass index of the study patients (n=120)

Body mass index	Frequency	Percentage
Underweight	15	12.5
Normal	47	39.2
Overweight	18	15.0
Obese	40	33.3
Mean±SD	22.16±5.43	

Current smoker was found 35(29.2%), current alcoholic was 3(90.0%), non-smoker was 43(35.8%). Other addictions was found 28(23.3%), family caregiver was 72(60.0%), family help during hospitalization 75(62.5%) (Table III).

Table III: Socio-environmental parameters of the study patients (n=120)

Parameters	Frequency	Percentage
Smoking status		
Current	35	29.2
Non-smoker	43	35.8
Former	42	35
Alcohol status		
Current	3	2.5
Never	108	90
Former	9	7.5
Other addictions		
Yes	28	23.3
No	92	76.7
Family caregiver		
Yes	72	60.0
No	18	15.0
Partial	30	25.0
Family help during hospitalisation		
Yes	75	62.5
No	12	10.0
Partial	33	27.5

Mean waist circumference was found 99.8 ± 8.6 cm, mean systolic blood pressure was $132. \pm 15.3$ mmHg, mean diastolic blood pressure was 77.5 ± 9.7 mmHg, mean HR by pulse palpation 65.2 ± 12.5 bpm and mean HR on ECG was 64.4 ± 11.7 bpm. Sinus rhythm was found in 95(79.2%), atrial fibrillation/flutter was 8(6.7%) and left bundle branch block 10(8.3%) (Table IV).

Table IV: Distribution of the study patients by clinical profiles (n=120) mean

Clinical profiles	Mean \pm SD	
Waist circumference (cm)	99.8 \pm 8.6	
Systolic blood pressure (mmHg)	132.1 \pm 15.3	
Diastolic blood pressure (mmHg)	77.5 \pm 9.7	
HR by pulse palpation (bpm)	65.2 \pm 12.5	
HR on ECG (bpm)	64.4 \pm 11.7	
ECG findings	Frequency	Percentage
Sinus rhythm	95	89.2
Atrial fibrillation/flutter	8	6.7
Left bundle branch block	10	8.3

Rheumatic heart disease was found in 38(31.7%), cardiomyopathy was 30(25.0%), hypertensive 21(17.5%), pericardial disease 16(13.3%) and ischaemic heart disease 3(2.5%) (Table V).

Table V: Co-morbidity of the study patients (n=120)

Co-morbidity	Frequency	Percentage
Rheumatic heart disease	38	31.7
Cardiomyopathy	30	25.0
Hypertensive	21	17.5
Pericardial disease	16	13.3
Ischaemic heart disease	3	2.5

Factors associated of congestive heart failure, 25(20.8%) had inadequate therapy, 25(20.8%) had arrhythmia, 23(19.2%) had respiratory infections, 17(14.2%) had anaemia and 23(19.2%) had infective endocarditis (Table VII).

Table VII: Factors associated with patient deterioration leading to admission with congestive heart failure (CHF) (n=120)

Factor associated	Frequency	Percentage
Inadequate therapy	32	26.7
Arrhythmia	25	20.8
Respiratory infections	23	19.2
Anaemia	17	14.2
Infective endocarditis	23	19.2

Majority 75(62.5%) patients had NYHA class II, 38(31.7%) had class III and 7(5.8%) had class IV (Table VII).

Table VII: Distribution of the study patients by New York Heart Association (NYHA) functional classification (n=120) NYHA functional classification

NYHA functional classification	Frequency	Percentage
Class II	75	62.5
Class III	38	31.7
Class IV	7	5.8

Discussion

Current study showed that majority 45(37.5%) patients belonged to age 41-50 years, the mean age was found 53.2 ± 15.4 years. Male was predominant (62.5%), male: female ratio was 1.7:1. Majority patients were married (95.8%). More than three fourth (79.2%) patients came from urban area. Most of the patients were found completed primary education level (39.2%). Almost one third (31.7%) patients were service holder. One third (33.3%) of the patients came from lower middle income group family. Chaaya *et al.*,¹⁰ reported that the mean age of respondents was 72.4 ± 7.2 years and there were slightly more females (56.2%) than males. The majority had a living spouse (62%) and almost 80% have had a formal education in their life. Close to one third of participants perceived their personal income as insufficient. Anjoset *et al.*,¹¹ observed that, it was found that just over half of the sample consists of women (58.1%), median age of 52.7 years old (12.9), married

(55.8%), living with spouse and children (41.9%), with median 6.4 of study (3.2) inactive years (47.7%), with a monthly average individual income of 1.9 (1.2) minimum wages (MW) and average monthly family income of 2.9 (1.9) MW. Abedin *et al.*,¹² found in their study that 68 (67%) were men and 34 (33%) were women with a mean (\pm Standard Deviation) of subjects' age was 55 (± 14) years constitute the study population. Most of the population (42%) belong to age group 51-60 years (Age ranging from 18-80+ years) had readmissions ($P < 0.0004$). Almost all of them (98%) were married. Most of the (55%) population came from village and Upazilla area, 41% were from city areas and rest 4% from district. Majority population (59%) was illiterate or has primary level education. Half of the population (50%) was retired and only 29% were continuing their job. About two third of population (62%) were from middle class income group (11500-200000 Tk) and there was total absence from

upper income group. Precipitating acute heart failure in the form of de novo or chronic congestive heart failure was more common in 51-60 years age group with the mean age (SD±) of the population was 55 ± 7 years.¹³ Several studies found that the male participants were dominant which are almost similar to our findings.¹³⁻¹⁵ According to the International Congestive Heart Failure (INTER-CHF) study, 46% hospitalized populations came from rural area, whereas 55% came from rural area (village and upazilla) area in our study.¹⁶ Most of the patients (62%) belonged to middle income group (11500- 200000 Tk) family. Rest (38%) belonged to lower income group (<11500 Tk) and none of them from upper income group (>200000 Tk). Philbin et al.,¹⁷ 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 study.

In current study showed that majority 47(39.2%) patients were normal body weight and 40(33.3%) were obese. The mean BMI was found $22.16 \pm 5.43 \text{ kg/m}^2$. Abedin et al.,¹² reported similar observation they showed the mean value of BMI (\pm SD) of the study subject was 23.72 ± 4.63 and 33.2% were obese, 15% were overweight, 13% were underweight. Zamorano et al.,¹⁸ reported that the mean BMI was found 27.8 kg/m^2 with range from 25.7 to 30.5 kg/m^2 .

In this study showed that current smoker was found 35(29.2%), current alcoholic was 3(9.0%) and non-smoker was 43(35.8%). Other addictions was found 28(23.3%), family caregiver was 72(60.0%), family help during hospitalization 75(62.5%). Chaaya et al.,¹⁰ observed around one third was non-smokers (35.1%) and one fourth current smokers (24.3%) with higher proportions among males as compared to females (ever

smokers: 47.0% vs. 25.9%; current smokers: 33.7% vs. 17.1%). Less than one in seven older adults (13.4%) reported ever drinking alcohol. Abedin et al.,¹² reported 62.7% were currently or former smoker. Significant percent (63%) population had family caregiver. During hospitalization, 67% population got full family help during staying at home. Large percentage (73%) of population had partial adherence to diet and 56% had no adherence to advised lifestyle. Significant number of patients (76%) had partial or non-adherence to drugs ($P < 0.004$). Nooriet al.,¹⁹ had showed in their study that 69% patient had poor adherence to drug that is similar to our study result. Tsuchihashiet al.,¹⁵ showed that most of the patient (80%) had caregiver service which is similar with our study and 21% patient lived alone and also in another study, 21% population lived alone which is dissimilar with our study.²⁰

In this study showed that mean waist circumference was found $99.8 \pm 8.6 \text{ cm}$, mean systolic blood pressure was $132. \pm 15.3 \text{ mmHg}$, mean diastolic blood pressure was $77.5 \pm 9.7 \text{ mmHg}$, mean HR by pulse palpation $65.2 \pm 12.5 \text{ bpm}$ and mean HR on ECG was $64.4 \pm 11.7 \text{ bpm}$. Sinus rhythm was found in 95(79.2%), atrial fibrillation/flutter was 8(6.7%) and left bundle branch block 10(8.3%). Zamorano et al.,¹⁸ reported the mean WC was found 99 cm with range from 91 to 106 cm, mean SBP $131 \pm 16 \text{ mmHg}$, mean DBP $76.0 \pm 10.0 \text{ mmHg}$, mean HR by pulse palpation $66.0 \pm 11.0 \text{ bpm}$ and mean HR on ECG was $65.0 \pm 11.0 \text{ bpm}$. Sinus rhythm was found in 1942(93.0%), atrial fibrillation/flutter was 95(5.0%) and left bundle branch block 154(7.0%)

In this study , rheumatic heart disease was found in 38(31.7%), cardiomyopathy was 30(25.0%), hypertensive 21(17.5%), pericardial disease 16(13.3%) and ischemic heart disease 3(2.5%). Oyoo and Ogola²¹

Study observed almost 32% had rheumatic heart disease, 25.2% had cardiomyopathy, 17.6% hypertensive heart disease, 13.2% had pericardial disease while 2.2% had ischaemic heart disease.

In present study showed that factors associated of congestive heart failure, 25(20.8%) had inadequate therapy, 25(20.8%) had arrhythmia, 23(19.2%) had respiratory infections, 17(14.2%) had anaemia and 23(19.2%) had infective endocarditis. Oyoo and Ogola²¹ reported similar observation they showed factors associated with patient deterioration leading to admission with congestive heart failure (CHF) included inadequate therapy (27.4%), arrhythmia (20.9%), respiratory infections (17.6%), anaemia (13.2%) and infective endocarditis.

In this study showed that majority 75(62.5%) patients had NYHA class II, 38(31.7%) had class III and 7(5.8%) had class IV. Oyoo and Ogola²¹ reported sixty two per cent of patients investigated were in New York Heart Association (NYHA) functional classification class IV, 31.9% in class III and 5.5% in class II.

Conclusions

Major socio-environmental factors raised the risk of readmission due to congestive heart failure in conjunction with medical and demographic factors. This study observed that applying some plans in vulnerable groups and conducting some education interventions to optimize the patient's awareness of drug, diet, life style and some medical advice adherence would be useful in further decreasing readmission due to congestive heart failure.

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