

Original Research Article

Prevalence of Heart Failure Patients Admitted in the Winter and Other Seasons in a Tertiary Care Hospital Bangladesh

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Abstract: Background: As a leading global cause of death and disability, heart failure places a significant strain on the healthcare system. It has been observed that in some countries, there is a seasonal increase in the number of people admitted to hospitals with heart failure during winter. However, there is a dearth of population-based statistics for Southeast Asia and Bangladesh. with regards to this subject. **Objective:** To determine the number of patients with heart failure admitted during the winter and other seasons in Bangladesh's tertiary care hospitals. **Materials and Methods:** This study used a cross-sectional, observational design. The study was carried out at the Cardiology Department of Dhaka Medical College Hospital (DMCH). The research took place over the course of a year, from April 2015 to March 2016. Patients with heart failure who are admitted to the DMCH's Cardiology Department constitute the study population. This study made use of a systematic sampling strategy. All 584 patients who visited the hospital's cardiology department were counted. Patients' demographics, medical histories, symptoms, and test results were recorded on a standard data collection form. The statistical software package SPSS 22.0 was used to analyze the data (Statistical Package for Social Science). **Results:** Heart failure patients were most prevalent in the 41 to 60 age group, with 74.3% being men and 25.7% being women. The winter season saw the largest number of patient admissions (n=207, 35.5%). Compared to other seasons, the winter had higher concentrations of all risk variables. It is statistically significant, with the exception of thyroid issues and dyslipidemia (p-values of <0.222, <0.001, <0.001, <0.001, and <0.006). **Conclusion:** General practitioners might learn how to handle heart failure patients' responses to the cold and hone their abilities in this area. This research may also be useful for modifying the wintertime accessibility of hospital resources like emergency rooms.

Keywords: Heart Failure, Seasons, Risk factors.

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INTRODUCTION

Heart failure (HF) is a major public health problem, with an estimated 5.8 million people currently affected in the United States of America (USA), and over 23 million people affected globally. More than 550,000 people in the United States receive a diagnosis of heart failure each year, and the likelihood of developing this syndrome over the course of one's lifetime is approximately one in five. Despite the progress that has been made in medical management, heart failure continues to be one of the leading causes of morbidity and mortality. This condition places a significant and ever-increasing burden on the health care system. In the United States, approximately 2.4 million people are hospitalized each year due to heart failure, and nearly

300,000 people pass away as a direct result of heart failure [1]. There was a seasonal variation in the rate of hospitalization due to various CVDs, with an increased rate during the winter months, as reported by several studies [2-7]. A seasonal variation in the number of admissions to a hospital in western Sicily (Italy) due to acute myocardial infarction (MI) [2] and angina [3] was reported by Abrignani MG *et al.*, They discovered that wintertime reaches a significant peak. An increased rate of hospitalization for acute myocardial infarction was also reported by Loughnan ME *et al.*, [4] in a hospital located in Melbourne (Australia). Indeed, Gotsman I *et al.*, [5] observed the seasonal variation in hospitalization for heart failure (HF) in the Heart Institute at Hadassah University Hospital in Jerusalem, Israel. This research was conducted in Israel. They discovered that there was

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a significant seasonal variation, with admissions being at their highest during the winter months. Several additional authors from a variety of countries also reported findings that were comparable [6, 7]. On the other hand, there is only a very small amount of information about Bangladesh that can be found online in relation to this topic. In Bangladesh, Khan RC and Debabrata Halder conducted a study on the seasonal variation of cardiovascular diseases (CVDs) in the Cardiology Department of the Sher-e-Bangla Medical College Hospital in Barisal. The study was focused on the seasonal variation of cardiovascular diseases. Then, using the hospital registry books, the number of patients who were hospitalized as a result of the various CVDs, as well as the number of deaths that occurred among these hospitalized patients, were recorded. During the course of the research, a total of 8371 patients suffering from CVDs were hospitalized (2010-2012). The highest number of these patients, 513 (32.4%), were admitted in the winter. Among these patients, 1582 (18.4%) were admitted because they were suffering from acute left ventricular failure. The research was carried out in a regional hospital in the southern district of Barisal, which is located in Bangladesh. This research was carried out by us at the Cardiology Department of the Dhaka Medical College Hospital, which is the premier, most centrally located, and largest tertiary care hospital in the country, and where patients travel from all over the country to receive treatment. Morbidity and mortality rates are significantly increased in patients who suffer from heart failure. The objective of this study was to determine the number of patients admitted during the winter and other seasons in the Cardiology Department of DMCH with heart failure [8].

OBJECTIVE

To find out the numbers of heart failure patients admitted in the winter and other seasons in Bangladesh tertiary care hospitals.

MATERIALS AND METHODS

This study used a cross-sectional, observational design. The study was carried out at the Cardiology Department of Dhaka Medical College Hospital (DMCH). The research took place over the course of a year, from April 2015 to March 2016. Patients with heart failure who are admitted to the DMCH's Cardiology Department constitute the study population.

Inclusion Criteria:

- The patients admitted in the cardiology Department of DMCH with heart failure.

Exclusion Criteria:

- The patients who had denied to come under study.
- The patients who were admitted with chronic obstructive pulmonary Disease (COPD) and Bronchial asthma & wrongly prepared to have HF.

Data Collection:

A structured data collection sheet was used to record the patients' histories, symptoms, clinical data, and results of any investigations. The patients who met the inclusion and exclusion criteria and were hospitalized to the Cardiology Department of DMCH with heart failure were included in the study. In a standardized questionnaire, history, signs and symptoms, clinical and investigative data were documented.

Data Analysis:

Based on their affinity, all information was presented in the most suitable tables or graphs. An explanation was provided for each table and graph to make them simpler to understand. The SPSS 22.0 programs (Statistical Package for Social Science) were used to undertake the statistical analysis of the data. The ANOVA test was used to ascertain whether there is a connection between the occurrence of heart failure and the seasons. To ascertain the connection between the variables, chi-square and other statistical tests were also performed. The results were declared statistically significant by a p value of 0.05.

RESULTS

According to Table 1, the age group of 41 to 60 years had the highest number of patients hospitalized for heart failure at 303 (51.9%). This was followed by a progressive decline to 184 (31.5%) in the age group of 61 to 80 years, 77(13.18%) in the age group of 21-40 years, and 20 (3.42%) patients in the age group of 81 to 100 years. It was determined that there was a statistically significant gap between these age groups (p 0.001). On average, they are 55 years old, with a range of 18 ±12.42 years.

Table 1: Distribution of heart failure admission patients by decade(n=584)

Age group in years	Frequency	Percentage (%)
21-40	77	13.18
41-60	303	51.90
61-80	184	31.50
81-100	20	3.42
Total	584	100.0

The male-to-female ratio was 2.8:1, as shown in Figure 1, with 74.3 percent of respondents being male and 25.7 percent being female. Patients admitted to the

hospital with heart failure were significantly more likely to be male than female (Figure 1).

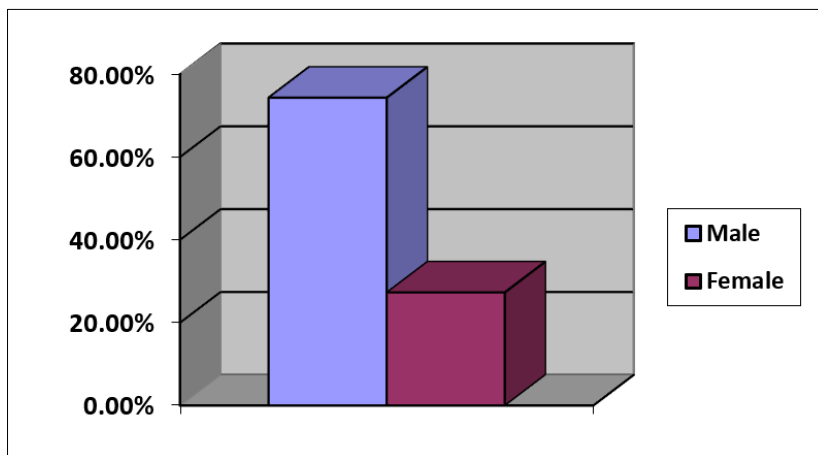


Figure 1: Sex Distribution of the Patients (n=584)

The number of patients who were admitted during the winter was the highest (n = 207, 35.5%), followed by the post-monsoon (n = 149, 25.5%), the monsoon (n = 120, 20.5%), and the summer (n = 108,

18.5%), as shown in Figure 2. In comparison to other times of the year, winter saw a greater number of patients admitted to hospitals with heart failure.

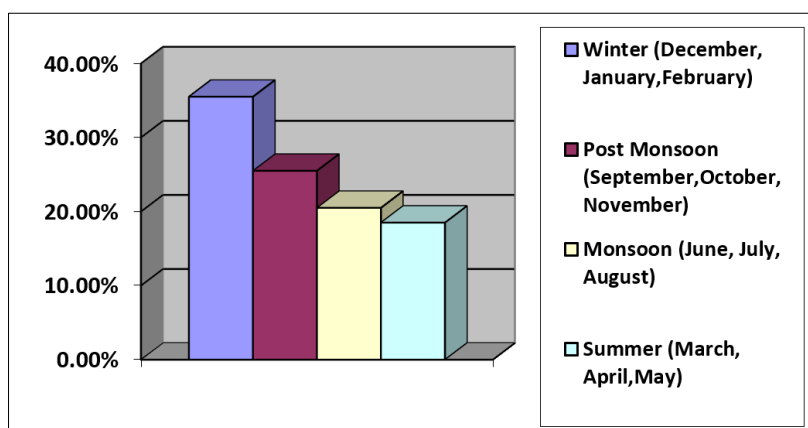


Figure 2: Distribution of the heart failure admission patients by seasons(n=584)

The number of patients admitted during the winter was the highest (n = 207, 35.5%), followed by the number of patients admitted during the post-monsoon (n = 149, 25.5%), the monsoon (n = 120, 20.5%), and the

summer (n = 108, 18.5%), as shown in Figure 2. ems and dyslipidemia, the results are statistically significant (p-values of 0.222, 0.001, 0.001, 0.001, and 0.006).

Table 2: Distribution of heart failure admission patients by risk factors, co-morbidities and seasons (n=584)

Risk Factors	Winter	Post Monsoon	Monsoon	Summer	P value
Smoking	44.7%	24.8%	20.5%	10.0%	<0.001*
HTN	43.9%	21.8%	20.1%	14.2%	<0.001*
OM	42.5%	22.9%	19.6%	15%	0.022*
Dyslipidemia	35.6%	23.3%	21.7%	19.4%	0.577"
Acute MI	49.7%	27.5%	19.4%	13.4%	<0.001*
CKD	42.1%	17.6%	19.9%	20.3%	<0.001*
Anemia	44.7%	27.7%	17%	10.6%	0.006*
Thyroid	39.6%	34.0%	15.1%	11.3%	0.223"8

DISCUSSION

Heart failure is a significant problem that affects public health on a global scale. In spite of the advances that have been made in modern management, it remains a significant and growing burden on the health care system as well as a major cause of morbidity and mortality. More than 23 million people around the world and 5.8 million people in the United States of America (USA) are now considered to be the majority. Heart failure is the final stage in the progression of many cardiac diseases. Both coronary heart disease and high blood pressure are considered to be the primary contributors to heart failure (HF) in industrialized countries (either separately or jointly). It has been observed that hospital admissions for heart failure fluctuate with the seasons and reach their highest point in the winter in a number of different regions of the world [8].

In this study the age group of 41 to 60 years had the highest number of patients hospitalized for heart failure at 303 (51.9%). This was followed by a progressive decline to 184 (31.5%) in the age group of 61 to 80 years, 77(13.18%) in the age group of 21-40 years, and 20 (3.42%) patients in the age group of 81 to 100 years. It was determined that there was a statistically significant gap between these age groups (p 0.001). On average, they are 55 years old, with a range of 18 ±12.42 years.

The number of patients who were admitted during the winter was the highest (n = 207, 35.5%), followed by the post-monsoon (n = 149, 25.5%), the monsoon (n = 120, 20.5%), and the summer (n = 108, 18.5%), as shown in Figure 2. In comparison to other times of the year, winter saw a greater number of patients admitted to hospitals with heart failure.

Several authors have explained how the cold weather is linked to an increase in the incidence of different CVDs that result in hospitalization [9-19].

According to the findings of our research, there were 434 male patients with heart failure who were admitted to the hospital female 150 (25.7%). The number of male patients was approximately 2.8 times that of female patients. Similar to our study, some other studies found that hospital admissions for HF were more common in men than in women [8, 20-22].

Prevalence of smoking, hypertension, obesity, coronary heart disease, chronic kidney disease, anemia, dyslipidemia, and thyroid disorders in winter were more (60.1%, 51.7%, 41.1%,44.7%, 24.1%, 52.9%, 9.1%, 25.5% respectively) in comparison to the summer (10%, 14.2%, 15.0%, 18.9%, 13.4%, and 25.5% respectively). 11.1%, 10.6%) as well as other times of the year.

CONCLUSION

This study found that there was a seasonal trend in heart failure hospitalizations, with the winter months seeing the highest rates. Patients at risk for heart failure may benefit from education about heart failure and treatment options, as well as awareness of the seasonal increase in risk. During the busiest time of the year, this is absolutely necessary for ensuring that patients with heart failure receive timely and adequate care. Healthcare providers could also do well to work with local groups and social services to make sure that people with heart failure have access to transportation and home heating programs during the colder months.

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