

Practice patterns in the management of congestive heart failure and post-discharge quality of life: A hospital-based cross-sectional study

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ABSTRACT

Objective: The objective of the study is to identify the etiology, risk factors, frequency of major and minor components of the Framingham criteria for heart failure, discharge medications, mortality, and quality of life after discharge from the hospital, for patients who were admitted to the in-patient unit of a tertiary care hospital in central India, with a diagnosis of congestive heart failure (CHF). **Methods:** This hospital-based cross-sectional study involved retrospective chart review of patients who were admitted to the in-patient unit with a diagnosis of CHF. These patients were then attempted to reach via their telephone numbers listed in the medical records and their current quality of life was assessed using Euro-QoL 5D questionnaire. **Results:** In the 69 patients who were admitted to the hospital with congestive cardiac failure during the pre-defined period, ischemic heart disease was the most common etiology and smoking was the most common risk factor for the development of CHF. The most common findings based on Framingham criteria were dyspnea on mild exertion, rales and bilateral ankle edema. It was determined that one-fourth of the individuals were non-compliant to the medical treatment and more than half of the patients had a poor health score. **Conclusion:** Smoking remains to be a major risk factor for patients to develop ischemic heart disease and subsequent CHF. Patients with congestive cardiac failure also had severe deterioration in their quality of life after discharge from the hospital, implying the need for improving efforts toward prevention and better management.

Keywords: Congestive heart failure, Euro-QoL 5D, framingham criteria

Introduction

About 26 million people worldwide and 5.7 million people in the United States have heart failure.^[1,2] Congestive

heart failure (CHF) presents with generalized weakness, difficulty breathing while doing physical activity and on lying down, and swelling in feet, legs, ankle, and abdomen. Advanced heart failure is a malignant disease by nature. Chronic heart failure is associated with poor prognosis and poor quality of life. Despite marked improvements in medical and device therapy, the mortality following hospitalization for patients with heart failure is 13% at 30 days, 32% at 1 year, and 64% at 5 years.^[3]

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Aside from the high mortality, CHF is also associated with increased morbidity.^[4-6] Quality of life reflects the multidimensional impact of a clinical condition and its treatment on patients' daily lives. In patients with CHF, the deterioration of the quality of life is much more serious than other chronic disease such as arthritis and chronic obstructive pulmonary disease.^[7] Quality of life is impaired because of exercise intolerance and symptom distress, poor role functioning in marital and family relationships, decreased performance at jobs, sleeping difficulty, depression, and reduced social support. The prevalence of depression in acute and chronic heart failure is estimated at 35–60% and 11–25%, respectively. In patients with CHF, the prevalence of insomnia varies from 23% to 73%.^[8,9]

There are a variety of pharmacological options for the management of CHF, including diuretics, ACE inhibitors, Angiotensin Receptor Blockers, Beta-blockers, Digoxin, vasodilators and aldosterone antagonists.^[10] Physicians may prescribe various combinations of medications depending on the severity of disease, age, coexisting morbidities, and tolerance to medications.

The objectives of this study were to determine the etiology, risk factors, practice patterns, and post discharge adherence and quality of life, of patients who are admitted to the in-patient unit of an urban tertiary care hospital with the diagnosis of CHF. Determining the impact on the quality of life of symptomatic CHF patients after a hospital stay would help the primary care physician target their efforts toward improving medication adherence, and thereby improving this important patient-centered outcome.

Methodology

A hospital-based cross-sectional study was conducted in the Internal Medicine inpatient unit of an urban tertiary-care hospital in central India from July–October 2017. Using chart review, a list of all the patients who were admitted to the in-patient department during the period from January 2013 to December 2016 with a primary admission diagnosis of CHF were identified. Patients with age less than 18 years were excluded from the study. A total of 69 eligible patients were identified and were included in the study. The information regarding the etiology, cardiovascular risk factors, comorbidities, presence of various components of the major and minor Framingham criteria, and medications on discharge from the hospital, were obtained from the patient charts.

Out of these 69 patients, 3 patients had died during the hospital stay. The remaining 66 study participants were attempted to contact over the phone using phone numbers available on the patient charts. We succeeded in reaching out to 51 patient families. A total of nine patients had died following the hospital stay. The remaining 42 patients provided telephonic consent to continue in the research study [Figure 1]. Their compliance to medical treatment, follow-up frequency and the present quality of life were assessed using telephonic interviews.

The EuroQOL-5D-5L questionnaire in Hindi was used to assess the quality of life. The EuroQOL 5D-5L questionnaire consists of two components: the first component includes assessing the five dimensions of health, namely “mobility, self-care, usual activities, pain/discomfort, and anxiety or depression”.^[11] The second component of the questionnaire consisted of EQ-VAS (visual analog scale). The VAS grades the participant's assessment of their health from a scale of 0–100 with 0 being the “worst health” and 100 being the “best health.” Enlisted participants were also asked about their current NYHA grade of dyspnea and whether any cardiac procedures were required after discharge from the hospital. Compliance to medical treatment was assessed by comparing the medications that the patients are currently taking, with their last known prescription.

Ethical Issues: The Institute Human Ethical Committee of the study site reviewed and approved the study protocol vide letter dated, 7th July 2017. A telephonic consent was obtained from the selected patients of congestive heart failure before including them in the study.

Results

After determining eligibility and obtaining consent, a total of 69 patients were enrolled in the study. From the study population, ischemic heart disease (44.93%) was identified to be the leading etiology of CHF, followed by valvular heart disease (23.19%) and hypertensive heart disease (11.59%) [Figure 2].

The study population had multiple risk factors for the development of CHF. The most common risk factors were smoking (55.07%), coronary artery disease (44.93%), and valvular heart disease (40.58%) [Figure 3].

Majority of the patients (86.95%) had reduced ejection fraction on admission to the hospital, with the mean ejection fraction of the study population on admission being 32.50%. Among the components of the Framingham Criteria for the diagnosis of CHF, chart review revealed that rales (91%) and paroxysmal nocturnal dyspnea (75%) were the most commonly reported

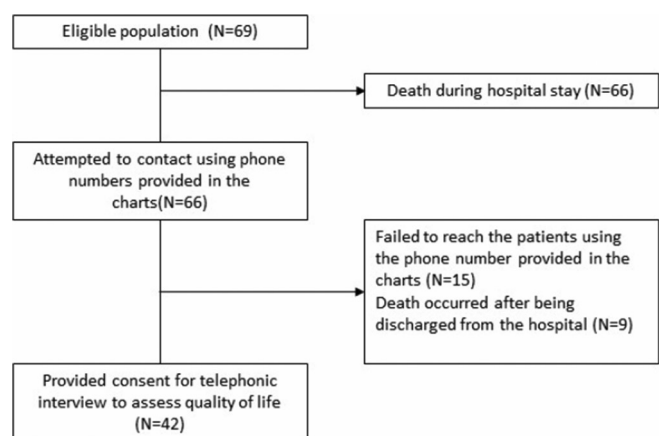


Figure 1: Study Design (N = 69)

findings on admission in the study participants, followed by neck vein distension (60%). Radiographic cardiomegaly, increased CVP pressure, and hepatojugular reflux were uncommonly reported among CHF patients. We could not get enough data on S3 gallop and weight loss, from patient records. Among the minor criteria, dyspnea on ordinary exertion (98%), bilateral ankle edema (86%), nocturnal cough (58%) were the most commonly reported findings in CHF patient, whereas hepatomegaly, pleural effusion, and tachycardia were uncommonly reported findings amongst CHF patients [Figure 4].

Of the 42 individuals who consented for a telephone interview, 78% of the patients reported some grade of dyspnea at present and 26% were not compliant to medical therapy. Of the 9 individuals who expired after discharge, 8 died from acute coronary syndrome and pulmonary complications of CHF. Analysis of discharge prescriptions revealed that loop diuretics (92.75%) and beta-blockers (71.01%) were the most commonly prescribed medications [Figure 5].

To the 42 participants who provided consent over the phone, the EuroQOL-5D-5L questionnaire in Hindi was administered to assess their quality of life. In our study group of 42 participants, 23% had a score greater than 12. Among the 5 dimensions of the questionnaire, difficulty in performing daily activities and mobility were affected the most in CHF patients, whereas anxiety/depression was affected the least. The second part of the questionnaire was to assess the current health score out of 100. The mean health total score at the time of contacting the patient was 71.4. In our study, 58% of the participants reported their health score to be below 50.

Discussion

The Framingham criteria is widely used in the diagnosis of CHF.^[12] The Framingham Criteria has been independently validated to have 90–100% sensitivity in the clinical diagnosis of patients with heart failure^[13-16] with variable specificity. To the author’s knowledge, there have been no prior studies in evaluating the prevalence of various components of the Framingham Criteria in patients diagnosed with CHF. The current findings of high prevalence of dyspnea on minimal exertion and pedal edema are in line with the expected natural history of the disease that would bring the patient to the hospital. The high prevalence of the physical examination finding of rales on auscultation is in line with the AHRQ criteria for hospital admission in patients with congestive heart failure.^[17]

Patients with heart failure are often discharged on multiple medications.^[18] Management of CHF are tailored toward reducing the risk factors^[10] so as to prevent further exacerbations and hospitalizations. For patients with Heart Failure with Reduced Ejection Fraction and hypertension, beta blocker, ACE inhibitors, Angiotensin II receptor blockers (ARB), Angiotensin receptor-neprilysin inhibitors, mineralocorticoid receptor antagonist and Hydralazine + nitrates have shown to

reduce mortality and improve survival. Loop diuretics, thiazide diuretics are most commonly used for acute exacerbation and as a discharge medication. These medications are optimized based on Left Ventricular Ejection Fraction.^[18] The FUTURE survey in comparison to our study has showed that the most common medications at the time of discharge from the hospital in patients with heart failure was beta-blocker (73% vs. 71%), ACE inhibitor (63.2% vs. 24.6%), loop diuretics (86% vs. 92.7%), and aldosterone antagonist (31% vs. 33.3%).^[19]

Coronary artery disease is the leading cause of heart failure in the general population.^[20] Our study has identified that smoking was the major risk factor among the patient population, followed by

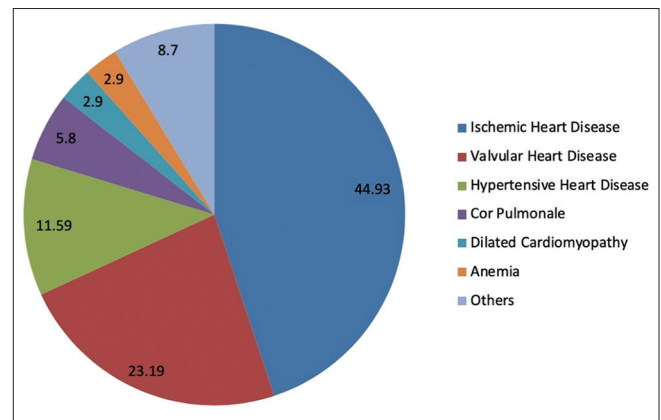


Figure 2: Etiology of congestive heart failure. (N = 69)

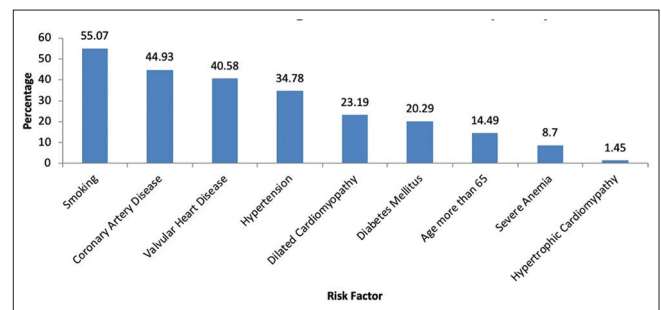


Figure 3: Risk factors for the development of congestive heart failure. (N = 69)

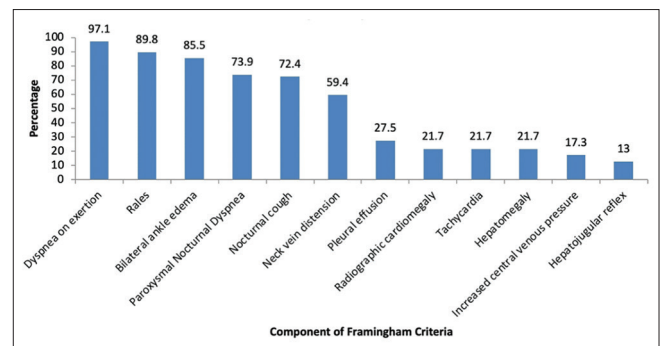


Figure 4: Frequency of various components of Framingham Criteria for the diagnosis of Congestive Heart Failure in the study population (N = 69)

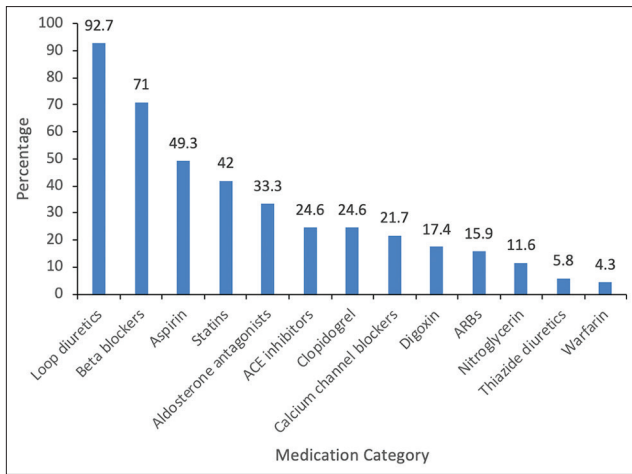


Figure 5: Frequency of various categories of medications prescribed to the patients of Congestive Heart Failure on discharge from the hospital ($N = 66$)

coronary artery disease, valvular heart disease, and hypertension. All patients with ischemic heart disease should undergo rigorous risk factor reduction like statins, aspirin, and smoking cessation. Revascularization of coronary vessels have shown to improve the quality of life, symptom status, and prognosis in patients with ischemic heart disease^[21] and may be beneficial in patients with heart failure precipitated by ischemic heart disease. Valvular dysfunction may be secondary or superimposed in many cases of heart failure.^[22] Surgical correction of valvular dysfunction has shown to improve cardiac function and resolution of symptoms. This study aims to focus efforts toward risk factor reduction and smoking cessation in the patient population with congestive heart failure. Targeted efforts to ensure smoking cessation in selected patient population may be beneficial to improve the quality of life and reduce the frequency of readmission.

Prognosis of patients with CHF is poor despite advances in treatment and care. In patients with CHF, an estimated 5-year mortality is 40–50%.^[23,24] It is estimated that more than 50% of the patients have a serious complication after discharge from the hospital, with a majority of them occurring within the initial 30 days of discharge.^[25] The readmission rate for patients with heart failure within 6 months of discharge from the hospital is more than 50%. Among patients with CHF, more than two-thirds of hospital admissions are due to preventable causes like medication non-compliance, irregular follow-up, and delay in seeking medical attention.^[26] In our study, 26% of the discharged patients were non-compliant to medical therapy. Interventions to improve adherence has shown to improve quality of life, physical activity, re-admissions and reduces mortality.^[27]

Patients with CHF often suffer from poor quality of life after discharge from the hospital. Depression has often been identified as the most important determinant of generic and disease specific quality of life.^[28] Measuring the quality of life in these patients is often challenging due to the varied focus of the instruments of measurement as well as the varied interpretation of the

subjective feeling of well-being.^[29,30] Numerous measures to identify the quality of life in patients with CHF has identified need to shift the focus of therapy from clinical and mortality outcome measures to patient-related outcome measures.^[31,32] Our study has detected that difficulty in performing the daily activities and factors affecting the mobility were the most affected in the perceived quality of life in the population.

Conclusion

CHF continues to have a high morbidity and mortality in the patient population we examined, with more than half of the patients experiencing significant reduction in quality of life after being discharged from the hospital. A high fraction of the patients is non-adherent to medical care implying the need for the healthcare team to set patient-directed goals of care and initiate discussions to promote self-perceived healthcare benefit. Smoking and ischemic heart disease are still the major contributor to the development of this prolonged debilitating condition and hence there is a need to strengthen the smoking cessation efforts from the primary care practitioners in the study population examined.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient (s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

References

1. Benjamin EJ, Muntner P, Alonso A, Bittencourt MS, Callaway CW, Carson AP, et al. Heart disease and stroke statistics-2019 update: A report from the American Heart Association. *Circulation* 2019;139:e56-528.
2. Savarese G, Lund LH. Global public health burden of heart failure. *Card Fail Rev* 2017;3:7-11.
3. Buddeke J, Valstar GB, van Dis I, Visseren FLJ, Rutten FH, den Ruijter HM, et al. Mortality after hospital admission for heart failure: Improvement over time, equally strong in women as in men. *BMC Public Health* 2020;20:36.
4. Kraai IH, Vermeulen KM, Hillege HL, Jaarsma T, Hoekstra T. Optimism and quality of life in patients with heart failure. *Palliat Support Care* 2018;16:725-31.
5. Passino C, Aimo A, Emdin M, Vergaro G. Quality of life and outcome in heart failure with preserved ejection fraction: When sex matters. *Int J Cardiol* 2018;267:141-2.
6. González-Colaço Harmand M, Prada Arrondo PC,

- Domínguez Rodríguez A. Quality of life for elderly patients with acute heart failure: Is it time to talk? *Emerg Rev Soc Espanola Med Emerg* 2018;30:360.
7. Ge L, Ong R, Yap CW, Heng BH. Effects of chronic diseases on health-related quality of life and self-rated health among three adult age groups. *Nurs Health Sci* 2019;21:214-22.
 8. Javaheri S, Redline S. Insomnia and risk of cardiovascular disease. *Chest* 2017;152:435-44.
 9. Kanno Y, Yoshihisa A, Watanabe S, Takiguchi M, Yokokawa T, Sato A, *et al.* Prognostic significance of insomnia in heart failure. *Circ J* 2016;80:1571-7.
 10. Yancy CW, Jessup M, Bozkurt B, Butler J, Casey DE Jr, Colvin MM, *et al.* 2017 ACC/AHA/HFSA Focused Update of the 2013 ACCF/AHA Guideline for the Management of Heart Failure: A report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Failure Society of America. *Circulation* 2017;136:e137-61.
 11. Vicent L, Nuñez Olarte JM, Puente-Maestu L, Oliva A, López JC, Postigo A, *et al.* Degree of dyspnoea at admission and discharge in patients with heart failure and respiratory diseases. *BMC Palliat Care* 2017;16:35.
 12. McKee PA, Castelli WP, McNamara PM, Kannel WB. The natural history of congestive heart failure: The Framingham study. *N Engl J Med* 1971;285:1441-6.
 13. Rosamond WD, Chang PP, Baggett C, Johnson A, Bertoni AG, Shahar E, *et al.* Classification of heart failure in the atherosclerosis risk in communities (ARIC) study: A comparison of diagnostic criteria. *Circ Heart Fail* 2012;5:152-9.
 14. Maestre A, Gil V, Gallego J, Aznar J, Mora A, Martín-Hidalgo A. Diagnostic accuracy of clinical criteria for identifying systolic and diastolic heart failure: Cross-sectional study. *J Eval Clin Pract* 2009;15:55-61.
 15. Sovero Z, Capcha E, Calderón-Gerstein W. Prospective validation of framingham criteria for congestive heart failure diagnosis in a high-altitude population. *Wilderness Environ Med* 2017;28:e4.
 16. Jimeno Sainz A, Gil V, Merino J, García M, Jordán A, Guerrero L. [Validity of Framingham criteria as a clinical test for systolic heart failure]. *Rev Clin Esp* 2006;206:495-8.
 17. Hospitalization Admission Criteria for CHF. *Am Fam Physician* 2000;61:1464.
 18. Masoudi FA, Baillie CA, Wang Y, Bradford WD, Steiner JF, Havranek EP, *et al.* The complexity and cost of drug regimens of older patients hospitalized with heart failure in the United States, 1998-2001. *Arch Intern Med* 2005;165:2069-76.
 19. Shreibati JB, Sheng S, Fonarow GC, DeVore AD, Yancy CW, Bhatt DL, *et al.* Heart failure medications prescribed at discharge for patients with left ventricular assist devices. *Am Heart J* 2016;179:99-106.
 20. King M, Kingery J, Casey B. Diagnosis and evaluation of heart failure. *Am Fam Physician* 2012;85:1161-8.
 21. Allman KC, Shaw LJ, Hachamovitch R, Udelson JE. Myocardial viability testing and impact of revascularization on prognosis in patients with coronary artery disease and left ventricular dysfunction: A meta-analysis. *J Am Coll Cardiol* 2002;39:1151-8.
 22. Koelling TM, Aaronson KD, Cody RJ, Bach DS, Armstrong WF. Prognostic significance of mitral regurgitation and tricuspid regurgitation in patients with left ventricular systolic dysfunction. *Am Heart J* 2002;144:524-9.
 23. Stewart S, Ekman I, Ekman T, Odén A, Rosengren A. Population impact of heart failure and the most common forms of cancer: A study of 1 162 309 hospital cases in Sweden (1988 to 2004). *Circ Cardiovasc Qual Outcomes* 2010;3:573-80.
 24. Loehr LR, Rosamond WD, Chang PP, Folsom AR, Chambless LE. Heart failure incidence and survival (from the Atherosclerosis Risk in Communities study). *Am J Cardiol* 2008;101:1016-22.
 25. Krumholz HM, Merrill AR, Schone EM, Schreiner GC, Chen J, Bradley EH, *et al.* Patterns of hospital performance in acute myocardial infarction and heart failure 30-day mortality and readmission. *Circ Cardiovasc Qual Outcomes* 2009;2:407-13.
 26. Bennett SJ, Huster GA, Baker SL, Milgrom LB, Kirchgassner A, Birt J, *et al.* Characterization of the precipitants of hospitalization for heart failure decompensation. *Am J Crit Care* 1998;7:168-74.
 27. Ruppard TM, Cooper PS, Mehr DR, Delgado JM, Dunbar-Jacob JM. Medication adherence interventions improve heart failure mortality and readmission rates: Systematic review and meta-analysis of controlled trials. *J Am Heart Assoc* 2016;5:e002606.
 28. Schowalter M, Gelbrich G, Störk S, Langguth J-P, Morbach C, Ertl G, *et al.* Generic and disease-specific health-related quality of life in patients with chronic systolic heart failure: Impact of depression. *Clin Res Cardiol* 2013;102:269-78.
 29. MacIver J, Wentlandt K, Ross HJ. Measuring quality of life in advanced heart failure. *Curr Opin Support Palliat Care* 2017;11:12-6.
 30. Kontodimopoulos N, Argiriou M, Theakos N, Niakas D. The impact of disease severity on EQ-5D and SF-6D utility discrepancies in chronic heart failure. *Eur J Health Econ* 2011;12:383-91.
 31. Tian J, Xue J, Hu X, Han Q, Zhang Y. CHF-PROM: Validation of a patient-reported outcome measure for patients with chronic heart failure. *Health Qual Life Outcomes* 2018;16:51.
 32. Nieminen MS, Dickstein K, Fonseca C, Serrano JM, Parissis J, Fedele F, *et al.* The patient perspective: Quality of life in advanced heart failure with frequent hospitalisations. *Int J Cardiol* 2015;191:256-64.