

Utilizing Pharmacist-Led Telehealth Services in Ambulatory Patients with Heart Failure

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Abstract

Background: Heart failure is one of the leading causes of hospital admissions. Non-adherence to medications and poor dietary management for patients who suffer from this condition can lead to worsening of symptoms and hospitalization. Pharmacist interventions via telehealth have demonstrated a beneficial impact on disease management and adherence outcomes in patients with chronic conditions.

Methods: This retrospective, descriptive cohort study reviewed subjects from a single-centered primary care office. Data was collected via electronic chart review between January and December 2021. Subjects eligible for inclusion were adults who were diagnosed with heart failure by their primary care provider and referred to a pharmacist for a telehealth visit. The primary outcome was the number of heart failure-related hospitalizations post-pharmacist intervention via telehealth. The secondary outcome was the number of cardiovascular-related hospitalizations post-pharmacist intervention via telehealth.

Results: 37 patients were included for analysis. Only two patients were admitted for heart failure post-pharmacist intervention. Fifteen patients were admitted post-pharmacist intervention for a cardiovascular-related hospitalization.

Conclusion: This report illustrates the employment of pharmacist-led telehealth services in the chronic heart failure population. This study encourages pharmacist-based interventions via telehealth in the ambulatory setting as few HF-related hospitalizations occurred in this cohort.

Introduction

The burden of heart failure (HF) is most prevalent in the elderly population, those 65 years or older.^{1,2} This is due to an age-related reduction in the heart's potential to counter physiologic stress such as exercise or pathologic stress provoked by conditions including sepsis and myocardial ischemia.³ According to data collected from the Atherosclerosis Risk in Communities Study, an estimate of 915,000 new instances of HF transpire per year in the United States (US) alone.³ The prevalence of HF is most preeminent in African-Americans, respectively, followed by Hispanic Americans, White Americans, and Chinese Americans.³ Data collected from the National Health and Nutrition Examination Survey (NHANES) demonstrated that by the age of 80 years old, the incidence of HF in the female population exceeds males by a 2.9% difference.³

Furthermore, HF is one of the leading causes of hospital admissions in the US, accounting for more than 6 million hospital days annually. A decline in HF admissions in US adults was seen from 2010 to 2013, while the opposite occurred from 2014 to 2017.⁴ The economic burden of HF is immense, with the gross amount of healthcare for this population surpassing \$30 billion per year, and it is projected that this will continue to rise to exceed \$70 billion by 2030.⁵

Non-adherence to medications and poor dietary management for patients who suffer from this condition can lead to worsening of symptoms and hospitalization.⁶ As such, patient education of the disease and individual medication regimen is needed to avoid complications and prevent hospitalization. Pharmacists play a crucial role in improving medication adherence, preventing adverse drug events, and preventing hospitalizations.⁷ Pharmacists are highly trained and qualified health professionals who can facilitate communication between other healthcare providers and patients.⁷ Several studies investigating the effect of pharmacists during in-person HF visits have demonstrated improvements in patients' self-maintenance, self-management, and self-confidence behaviors, increased use in guideline-directed medical therapy, shorter time to necessary follow-up visits, and reduction in 30-day mortality and hospital readmission.⁸⁻¹⁰ Another method of delivering pharmacy services that has been shown to demonstrate a positive impact on patient care is telehealth.⁷ In the outpatient setting, telehealth services allow the patient to have more accessibility to their provider by reducing the burden of in-person office visits.⁷ Pharmacist interventions via telehealth have demonstrated a beneficial impact on disease management and adherence outcomes in patients with chronic conditions.⁷ This report describes the experience of a pharmacist-led HF management service via telehealth.

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Methods

This retrospective, descriptive cohort study reviewed subjects from a single-centered primary care office. Data was collected via electronic chart review between January and December 2021. The timing of this study is important to note as interventions occurred during the coronavirus disease 2019 (COVID-19) pandemic. Subjects eligible for inclusion were

adults who were diagnosed with HF by their primary care provider and referred to a pharmacist for a telehealth visit.

Each initial telehealth visit was conducted telephonically and included a review of the patient's current symptoms, home self-monitoring vital signs, medications and medication adherence, and lifestyle management (i.e., intake of dietary sodium and fluids, exercise, smoking status) and adherence to HF-specific lifestyle strategies (i.e., dietary sodium intake less than 2 grams, fluid intake less than 2 liters). To identify medication adherence or non-adherence, the pharmacy team utilized the Drug Adherence Work-Up (DRAW) tool.¹¹ The pharmacy team was available to call patients Monday through Friday between 9AM and 5PM. Medication reconciliation and counseling as well as lifestyle and condition-specific education was provided at each visit. Recommendations were communicated to the primary care provider via a cloud-based electronic medical record. Follow-up visits were conducted on a case-by-case basis with the majority of patients following up with their primary care provider.

Demographics and other patient characteristics such as race, gender, medication and lifestyle adherence, and home vital signs (blood pressure, heart rate, weight) were collected. Social history regarding smoking status was recorded. HF classification by type (HF with a reduced ejection fraction [HFrEF], HF with a preserved ejection fraction [HFpEF], borderline HFpEF) and class (I, II, III, IV) were recorded.

The primary outcome was the number of HF-related hospitalizations post-pharmacist intervention via telehealth. The secondary outcome was the number of cardiovascular-related hospitalizations post-pharmacist intervention via telehealth. Hospitalizations were documented within the electronic medical record by the hospital coordinator of the primary care office. These records were reviewed by the pharmacy team for each respective HF patient during chart review. Demographic and baseline characteristics were reported using descriptive analyses. This study was approved by the Nova Southeastern University Institutional Review Board.

Results

A total of 37 patients were included for analysis. The study population consisted of mostly older (mean of 78 years) Caucasian (67.57%) females (64.86%) with a past medical history of HFpEF (59.46%) experiencing class II (54.05%) symptoms. Of note, only one patient had a past HF hospitalization. No patients were current smokers. Regarding medication and lifestyle adherence 21.62% and 35.16%, respectively, were not compliant at baseline (Table 1). Only two patients were admitted for heart failure post-pharmacist intervention. Fifteen patients were admitted post-pharmacist intervention for a cardiovascular-related hospitalization.

Discussion

Pharmacists play a critical role in promoting self-care strategies in HF patients. Incorporation of these self-care strategies, including medication adherence and recognition of symptoms, will eventually lead to better clinical outcomes such as reducing HF-related hospitalizations. Pharmacists can also promote lifestyle modifications to their patients, such as weight reduction, sodium and fluid restriction, and maintaining a healthy diet.¹² A randomized controlled trial found evidence to suggest that pharmacist interventions resulted in positive clinical outcomes. It showed improved drug adherence and decreased readmission rates in the first month after discharge.¹² Another randomized controlled trial deduced that HF patients who received pharmacist-based interventions compared to standard care had reduced hospitalizations and emergency room admissions for HF. This outcome led to fewer HF occurrences and all-cause mortality in the pharmacist-managed group.¹³

These studies demonstrate that pharmacists have an important role in the treatment of chronic conditions beyond medication reconciliation, particularly in the management of HF. As HFpEF guidelines suggest emphasizing treating other HF-related comorbidities, such as blood pressure, pharmacists are equipped to manage pharmacotherapy in patients with multiple chronic cardiac conditions.¹³ Of note, the rate of hospitalizations among the current study's cohort was approximately 5%, which is lower than the nationally reported rates of HF-specific 30-day rehospitalization ranging from 8% to 22%, and HF-specific 90-day rehospitalization ranging from 17% to 21% in the US.¹⁴ This study adds to the consistent evidence for the benefit of pharmacist involvement in HF patients, such as improvements in HF-related hospitalization.¹²

During the COVID-19 pandemic, telehealth was commonly utilized as a method for pharmacist-led interventions. A literature review reported that the telephone was the most frequently employed method of communication in clinics between the pharmacist and patients. Despite the intervention being virtual, most of the studies in this review concluded a positive influence on chronic disease management.¹³ This study found similar interventions executed in the pharmacist-managed telephone calls. These interventions were medication therapy management, remotely recording and monitoring vital signs and laboratory values, post-hospitalization follow-up, medication education, medication adherence, and promoting use of guideline-directed medical therapy. Based on the positive outcomes seen and the significant impacts of pharmacist-based interventions, it is reasonable to assume that this method is a vital component in the ambulatory or outpatient clinical care setting.¹³

The limitations of this current study include a small sample size, the short duration of the study, and observational design. Although baseline characteristics were somewhat diverse,

subjects included were geographically limited. The prevalence of mostly elderly Caucasian females with low disease severity should also be noted. Further studies should be conducted in order to confirm the applicability of study findings to populations with different demographics and geographical locations.

Conclusion

This report illustrates the employment of pharmacist-led telehealth services in the chronic heart failure population. This study encourages pharmacist-based interventions via telehealth in the ambulatory setting as few HF-related hospitalizations occurred in this cohort. Pharmacy services are quintessential in improving patients' health and controlling progressive conditions, such as HF. Further research is still needed with a larger sample size.

The opinions expressed in this paper are those of the author(s).

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Table 1. Baseline characteristics (n=37)	
Age, years (mean±SD)	78.4 ± 27.4
Gender	
Female, n(%)	24 (64.86)
Male, n(%)	13 (35.14)
Race	
Caucasian, n(%)	25 (67.58)
Hispanic, n(%)	6 (16.21)
African American, n(%)	6 (16.21)
HFrEF, n(%)	9 (24.32)
HFpEF, n(%)	22 (59.46)
Borderline HFpEF, n(%)	4 (10.81)
NYHA functional classification	
I, n(%)	7 (18.92)
II, n(%)	21 (56.76)
III, n(%)	8 (21.62)
IV, n(%)	1 (2.70)
Blood pressure, mmHg (mean±SD)	130/70 ± 37/19
Heart rate, beats per minute (mean±SD)	70 ± 19
Weight, kg (mean±SD)	98.83 ± 96.17
Medication non-adherence, n(%)	8 (21.62)
Lifestyle non-adherence, n(%)	13 (35.16)
<p>HFrEF, heart failure with a preserved ejection fraction; HFrEF, heart failure with a reduced ejection fraction; NYHA, New York Heart Association Medication non-adherence was identified using the Drug Adherence Work-Up (DRAW) tool¹¹ Lifestyle non-adherence was defined as patient unable to adhere to dietary sodium restrictions (≤2 grams daily) or fluid restrictions (≤2 liters daily)</p>	