A Community Pharmacy-Based Initiative to Increase Patients Ability to Recognize Heart Failure Symptoms and Improve Self-Management

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Abstract

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Introduction: Community pharmacists are uniquely positioned to recognize and educate heart failure (HF) patients and often have more frequent patient contact than primary care providers. Pharmacists can direct patients with early signs of worsening HF to their primary care provider, allowing these symptoms to be addressed before inpatient intervention is required.

Objective: The objective of this initiative is to assess patient knowledge of HF self-care, medications, and signs and symptoms of worsening HF before and after education from a trained community pharmacist. In addition, we hope to increase pharmacists' ability to initiate and facilitate ongoing discussions related to HF management and self-care.

Study Design: Patients at one Safeway Pharmacy location in Vancouver, WA were identified using a National Drug Code (NDC) report corresponding to an active prescription for furosemide, torsemide, or bumetanide as well as at least one active prescription for a guideline approved medication for HF including an angiotensin converting enzyme inhibitor, angiotensin II receptor blocker, an approved beta blocker, an aldosterone antagonist or sacubitril/valsartan. Patients age 18 or older who self-identified with a diagnosis of HF and consented to participate were included and patients who refused this service were excluded.

Methods: Patients were evaluated on their knowledge of HF self-care, medications, and signs and symptoms of worsening HF using a pre-assessment questionnaire prior to HF education by a trained community pharmacist. After HF education, patients were evaluated using a post-assessment questionnaire. Descriptive statistics were used to summarize patient responses to the pre-assessment and post-assessment. Changes in knowledge and competency were assessed using changes in Likert-scale responses.

Results: A total of 62 patients were identified with the initial NDC report and 34 patients also had an active secondary HF medication. 5 of those 34 patients were included in this initiative. Likert-scale responses were rated 1 through 5 (1 = not confident at all, 5 = confident). Improvements were seen in seeking medical care, understanding of HF, and managing HF. Improvements were also reported in adherence and measurements of daily weights.

Conclusion: HF led education by a community pharmacist has the potential to lead to improved patient knowledge of HF self-care, medications, and signs and symptoms of worsening HF. However, due to the small sample size in this initiative, we cannot make that conclusion at this time.

Introduction

Chronic heart failure (HF) represents a significant and growing burden for both patients and communities on a local and global scale. In the United States, over 5.7 million people have HF,[1] and despite new therapies and education of patients in primary care, the prevalence is rising. It is projected that by 2030, HF prevalence will increase by 43%, resulting in 8 million individuals diagnosed with HF.[2] In 2016, the lifetime risk of developing heart failure was 1 in 5 at the age of 40.[2] In 2011, the leading cause of 30-day hospital readmissions for Medicare patients was due to HF[7].

Heart failure is linked to significant morbidity and mortality and has reported rates of 50% mortality within 5 years of diagnosis.[1] The risk of mortality increases with hospitalization; patients admitted for acute decompensated HF have a one-year mortality rate of 20%.[3] Previous studies report that approximately 70% of HF-related hospital admissions occur in patients with previously known HF diagnoses.[3] Most symptoms indicative of worsening HF present at least 1 week (sometimes up to 3 weeks) prior to admission.[4] The symptoms for decompensated chronic HF include congestion and fluid retention, such as weight gain, exertional dyspnea, or orthopnea[4]. This early onset of warning symptoms represents a distinct opportunity to reduce HF-related hospitalizations through early recognition and intervention.

The Centers for Medicare and Medicaid Services (CMS) has placed an emphasis on improving health by linking payment to hospital readmission rates and has allowed pharmacists to spearhead HF lead interventions[5,6,7,11]. These studies have included clinical and community pharmacists in comprehensive HF management roles and for implementation of a efficient tools in a community pharmacy setting. In 2014[5], a study by Bleske, et al. created a unique screening tool called the One Minute Clinic for Heart Failure (TOM-C HF) to help community pharmacists identify patients with symptoms of worsening heart failure. 62% of the patients screened had one or more worsening symptoms or heart failure and the study concluded community pharmacists may be an important link in disease management programs. In 2017[8], a study by Kelling, et al. utilized the TOM-C HF tool to identify worsening symptoms and make interventions with primary care. The study surveyed the pharmacy students who used the tool and concluded the tool was feasible and these students valued these interventions.

Community pharmacists are uniquely positioned to recognize and educate HF patients. They are familiar with patients' medication lists and typically have more frequent patient contact than primary care providers. Pharmacists often have established patient relationships, which further promote their ability to educate HF patients. From the community pharmacy, pharmacists can then direct patients with early signs of worsening HF to their primary care provider, allowing these symptoms to be addressed before inpatient intervention is required. Reducing hospital admissions will improve patients' quality of life, decrease risk of mortality, and reduce the substantial cost burden associated with HF hospitalizations.

Objectives and Evaluation Strategy

The primary objective of this initiative was to increase HF patients' capacity for self-care and identification of signs and symptoms of worsening HF. To achieve this objective, we implemented a new educational initiative for HF patients. To support this activity, developed and implemented a training to increase pharmacists' capacity to educate patients on HF self-care, medication adherence, and signs and

symptoms of worsening HF. We evaluated patient knowledge of HF self-care, medications, and signs and symptoms of worsening HF before and after HF education from a trained community pharmacist.

Methods

Population:

Patients at a single community pharmacy grocery chain (Safeway, Albertsons Companies) in Vancouver, WA were identified using a National Drug Code (NDC) report corresponding to an active prescription for furosemide, torsemide, or bumetanide well as at least one active prescription for a guideline approved medication for heart failure including an angiotensin converting enzyme inhibitor, angiotensin II receptor blocker, an approved beta blocker, an aldosterone antagonist or sacubitril/valsartan in the last one year. Patients age 18 age or older who self-identify a diagnosis of HF were included in the initiative. Patients who refuse this service were excluded from the initiative. Oregon Health and Science University's Institutional Review Board deemed this initiative not human research November 2019.

Design:

Patients were evaluated on their knowledge of heart failure self-care, medications, and signs and symptoms of worsening heart failure using a pre-assessment questionnaire (Appendix 1.) prior to HF education by a trained community pharmacist. After HF education, patients were evaluated using a post-assessment questionnaire. All patients who completed the post-assessment questionnaire received a $15.00 Safeway gift card.

Data Analysis:

Descriptive statistics were used to summarize patient responses to the pre-assessment and post-assessment. Changes in knowledge and competency were assessed using comparisons of Likert-scale responses.

Overview of the Intervention:

Patients Knowledge: Identified patients received a standardized structured interview to assess their knowledge of HF self-care, medications, and signs and symptoms of worsening HF. In addition, patients received a heart failure education and self-care pamphlet created by the Heart Failure Society of America (HFSA) at the initial encounter. The pamphlet included common signs and symptoms of HF, common side effects of medications with management tips, and a diary for patients to record their daily weight and blood pressure readings or any symptoms related to HF.

Pharmacist Training: Pharmacists were trained to educate patients on self-care and medication adherence strategies. Pharmacist training included pathophysiology of HF, common signs and symptoms of worsening HF and treatment options. Training at this site included one PGY1 Community-Based Pharmacy Resident.

Results

A total of 62 patients were identified in the initial report for an active prescription for a loop diuretic and 34 patients had an active prescription for a guideline approved HF medication. Of those 34 patients, 18 we were unable to contact, 9 denied a diagnosis of HF, 2 denied consent, and 5 patients were included in the initiative (Figure 1). Patient demographics were collected for mean age, HF medications and target doses (Table 1). The pre-assessment and post-assessment questionnaire included 3 Likert-scale questions (Figure 2). Table 2 shows results from the pre-assessment questionnaire vs. the post-assessment questionnaire after pharmacist lead HF education.

Figure 1. Patient Recruitment

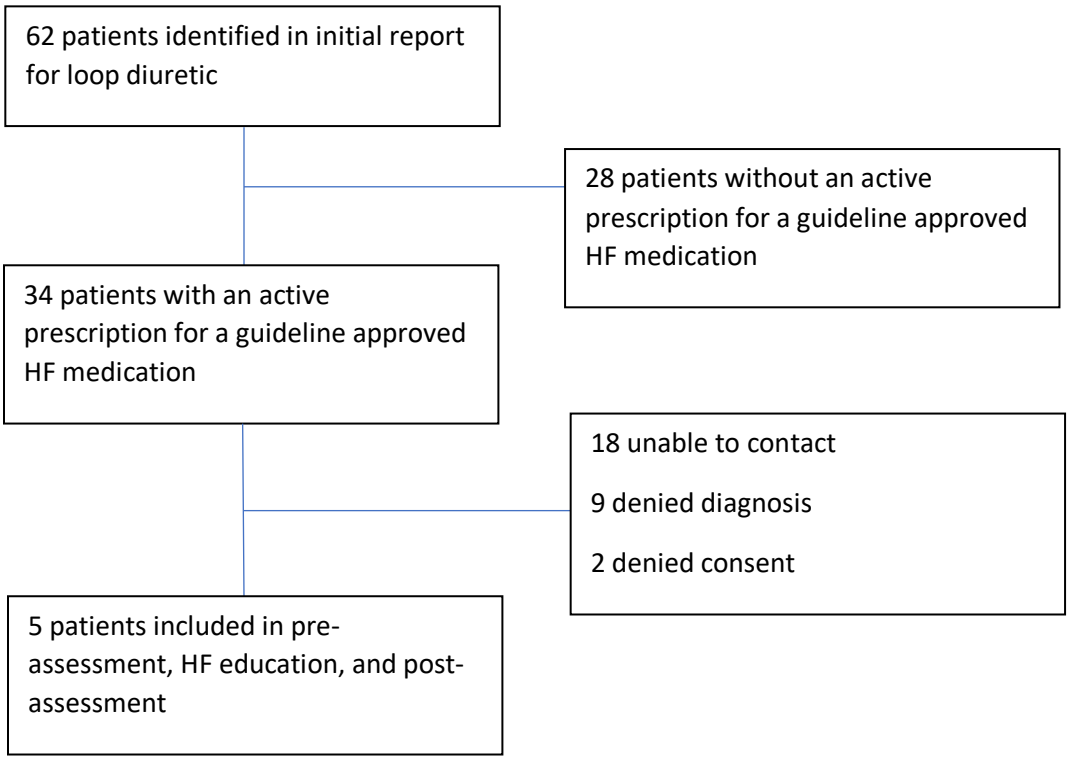
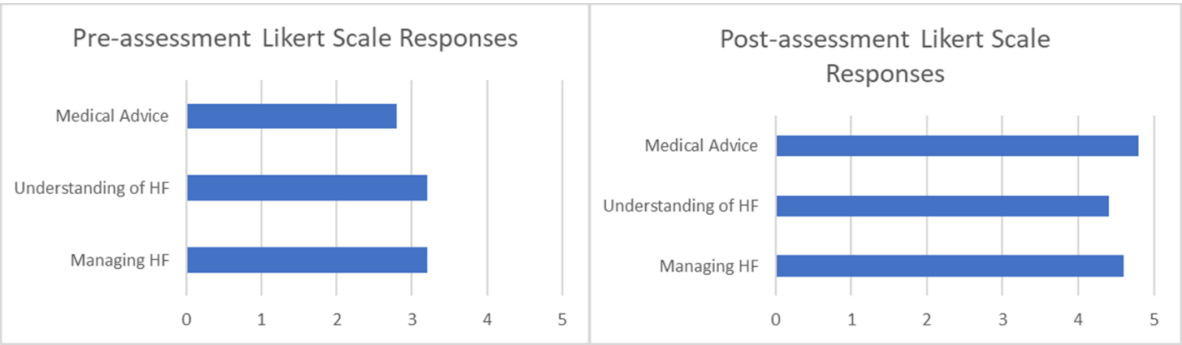


Table 1. Patient Demographics (n=5)

Characteristics	n (%)
Mean (SD) Age, Years	68.6 (8.2)
Medications	
ACEi/ARB	4 (80%)
Approved beta-blocker	5 (100%)
Spironolactone	2 (40%)
Target dose of beta-blocker	2 (40%)
Target dose of ACEi/ARB	2 (50%)
Managed by cardiologist	4 (80%)

Figure 2. Likert-scale pre-assessment questions



1 = not confident at all, 5 = completely confident

Table 2. Pre-assessment vs. Post-assessment questions

Assessment Question	Pre-assessment n (%)	Post-assessment n (%)
Do you know what Ejection Fraction is?	1/5 (20%)	4/5 (80%)
How often do you weigh yourself? Every day Weekly Monthly Rarely Never	 2/5 (40%) 1/5 (20%) 2/5 (40%)	 3/5 (60%) 2/5 (40%)
How many times per week do you miss taking your HF medications? 0 1-3 4-7 >8	 1/5 (20%) 4/5 (80% 	 4/5 (80%) 1/5 (20%)

Discussion

Results are limited due to the small number of patients included however, they highlight a potential for improved patient knowledge of HF self-care, medications, and signs and symptoms of worsening HF after a pharmacist led HF education. The three Likert-scale questions on managing HF, understanding HF, and knowing when to seek medical advice all improved in the overall patient population. Reported patient adherence and patients performing daily weights improved in the post-assessment questionnaire.

We anticipated a larger patient population being included in this initiative however, similar studies which have examined patient outcomes with pharmacist led HF education are consistent with our limited results. Bleske et al. showed the patients who are experiencing worsening signs and symptoms of heart failure and would benefit from a pharmacist led intervention using an efficient tool. Kelling et al. showed pharmacists are in position to make interventions with primary care using the tool created by

Bleske. Our initiative follows these studies and, with limited data, showed that pharmacists can improve patient's own ability and confidence managing their disease.

This initiative had many limitations. Due to the novel coronavirus pandemic (COVID-19), in person education by a community pharmacist was halted, and this limited our small sample size. In addition, we excluded patients who did not have a guideline approved secondary HF medication and potentially limited our study to exclude patients with heart failure with preserved ejection fraction (HFpEF) as these patients do not experience the same life prolonging benefits of these medications. Furthermore, nine patients denied a diagnosis of HF are were excluded from our initiative. We did not confirm with the patient's primary care to verify the denied diagnosis. If patients denied a diagnosis and do have HF, this could be a reflection in their gap of knowledge on their disease state. These patients may have benefitted the most from our interventions.

Multiple studies have shown that pharmacists can reduce hospitalization rates[6,7,11], however these interventions were timelier and more extensive than our initiative. The two most common symptoms associated with HF hospitalization were dyspnea (93%) and peripheral edema (70%)[10], which are both associated with fluid overload. These symptoms can be identified in the community pharmacy setting long before inpatient intervention is required. Our initiative increased how often patients weighed themselves and improved adherence, both driving factors in patient's ability to manage fluid overload symptoms.

Conclusions

Although the results are from a small number of patients, HF led education by a community pharmacist has the potential to lead to improved patient knowledge of HF self-care, medications, and signs and symptoms of worsening HF. This would suggest community pharmacists can improve patient's management of their HF. Future studies could investigate the impact of an efficient community-pharmacist led HF education on improving symptoms of fluid overload such as dyspnea and peripheral edema and hospitalization rates.

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Appendix 1

Heart Failure in the Community: Pre-Intervention Intake & Assessment

Patient Name: _____

DOB: _____

Preferred Phone Number: _____

Background Information/Pre-Intervention Assessment:

1. Who is your primary care provider? _____
    a. Do you see them for care related to your heart, or do you see a heart specialist?

        Primary Care Cardiologist Other Specialist

    b. [*If a specialist*] Who is your cardiologist/heart specialist? _____
    c. How long has it been since you saw the provider who manages your heart failure?

        Past Week Past Month 1-3 Months

        3-6 Months 6-12 Months >1 Year

2. Has a medical professional ever discussed the symptoms of heart failure with you?

    Yes No

3. What symptoms do you know of that may be a sign your heart failure is getting worse?

4. Do you currently have any of the symptoms you just listed? Have you had them in the past?

    Currently:

    Past:

5. When you take your heart failure medications, do you notice improvement in any of the symptoms mentioned above?

    Yes No

6. If your symptoms get worse, how confident are you that you know what to do or know who to reach out to for medical advice? Rate your confidence on a scale of 1 to 5.

    1 (Not at all) 2 3 4 5 (Completely)

1. Have your heart failure symptoms ever been bad enough that you have had to be hospitalized?

   Yes No

   a. If so, how many times has this happened? _____

   b. How long ago was the most recent hospitalization? _____

2. Many people occasionally forget to take their medications. How many times per week do you miss taking your heart failure medications?

   0 1-3 4-7 8-10 >10

3. Is there ever anything that makes you change the way you take your medications?

4. In addition to medications, do you have any implanted devices that help support your heart? Yes No

   a. If yes, do you know what type? _____

5. How often do you measure your blood pressure? _____

6. How often do you measure your heart rate? _____

7. How often do you weigh yourself? _____

8. Do you regularly use salt or salt substitutes (like Mrs. Dash)? Salt Substitutes None

9. In the average week, how many meals do you eat out (not a home-cooked meal)?

   0 1-3 4-7 8-10 >10

10. Has anyone ever talked to you about your "ejection fraction" (also known as "EF") before? It is a number that helps tell us about your heart function.

    Yes No

11. Do you know what your most recent EF is? _____

12. On a scale of 1 to 5, how well would you say you understand heart failure as a condition?

    1 (Not at all) 2 3 4 5 (Completely)

13. How comfortable are you with your current understanding and knowledge of how to manage your heart failure?

    1 (Not at all, I need to learn a lot more to feel comfortable) 2 3 4 5 (I feel completely comfortable with my current knowledge)