The Long-term Impact of Cardiac Rehab on Heart Failure Outcomes

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ABSTRACT

PURPOSE:

This study aimed to evaluate the effect of a long-term focused education and exercise training program on quality of life (QoL), minutes of exercise per week and key clinical measures in a group of patients with heart failure (HF).

SIGNIFICANCE:

Heart failure is a chronic and progressive disease that affects over 5 million US patients with over a half a million new cases diagnosed each year. Typically HF patients have significantly reduced levels of physical activity, QoL and an increased incidence of chronic depression.

BACKGROUND:

Despite published literature suggesting that exercise therapy and focused education can have significant impact on HF patients' QoL and functional ability, cardiac rehab (CR) and exercise training remain underutilized tools for HF patients.

METHODS:

The focus of this project was to provide long-term support, exercise guidance and self management education using the Phase III or maintenance CR model. Patients were referred to Kalispell Regional Medical Center's Heart Failure Program between January 2008 and January 2009. Patients attended non-ECG monitored supervised exercise sessions twice a week and periodic self management education classes. Outcomes evaluated included: blood pressure (BP), weight, exercise min/wk, depression as measured by the Geriatric Depression Scale Short Form (GDS) and QoL as measured by the Minnesota Living with Heart Failure (MNLHQ) survey.

RESULTS:

Forty patients participated in the program. Mean age was 66.4, 85% were males and the average number of months in the program was 16.6 (range= 12–24 months). A significant and clinical difference was noted in pre to post MNLHQ scores (51.1 vs. 23.5) and GDS scores (5.4 vs. 2.9). There were also significant improvements in body weight (229.8 lbs. vs. 220.8 lbs.) and systolic blood pressure (120.7 mmHg vs. 109.6 mmHg). Minutes of exercise per week increased dramatically over the course of the program from 26.7 min/wk to 167.4 min/wk. A decrease in diastolic BP occurred but did not reach statistical significance (67.9 mmHg vs. 63.9 mmHg).

CONCLUSION:

The long-term CR model with focused patient education had a significant impact on patients' QoL, quantity of exercise completed and selected clinical measures.

IMPLICATION FOR PRACTICE:

Integrating HF patients into Phase III or maintenance CR programs along with addressing specific patient education components can have a dramatic impact on QoL, depression, weight, blood pressure and weekly physical activity levels in HF patients over a 2-year period of time.

INTRODUCTION

Heart failure (HF) is a widespread, progressive disease that primarily affects the elderly, impacting approximately 5.8 million people in the United States with 670,000 newly diagnosed cases per year. (1) Heart failure accounts for a significant number of emergency room visits and contributes to over 1 million hospital admissions in the United States annually at an estimated cost in 2010 of $39.2 billion. (1, 2) An additional burden of HF is hospital readmission, which has been reported to be as high as 44% at 6 months. (3) Heart failure will continue to be a significant challenge as the number of people living with and dying from HF increases as the population ages and as treatment technology translates into an increased number of patients surviving myocardial infarctions. (4)

METHODS

In January 2008, Kalispell Regional Medical Center's Cardiac Rehabilitation Program in conjunction with The Summit Medical Fitness Center began enrolling patients into a HF exercise and education program. All patients were referred by their physician and had a HF diagnosis with an ejection fraction of <40%. Patients attended non-ECG monitored, supervised exercise sessions twice a week. In addition, patients exercised on their own by following a home-based pedometer walking program. Participants met with a dietitian at the beginning of the program and had access to additional dietary consultations if needed. Self-management education classes were offered to the participants on a monthly basis. (Table 1)

Table 1 – HEART FAILURE EDUCATION TOPICS ADDRESSED IN THE HEART FAILURE PROJECT

ABOUT HEART FAILURE • What does the term "Heart Failure – HF" mean? • What causes HF • What does HF feel like?
MANAGEMENT OF HF • Your MD's HF treatment plan • How you can help manage your HF • Your step-by-step plan for self management
EXERCISE AND HF • Exercising safely with HF • The importance of self-monitoring
ADDITIONAL CLASSES • Exercise basics • Heart healthy nutrition • Stress management • Life skills • Secondary prevention topics: risk factor modification

The outcomes the HF program evaluated over the 24-month course were changes in baseline to post-program values for several key measures including: resting blood pressure (BP), weight, exercise (minutes per week), QoL as measured by the Minnesota Living with Heart Failure Questionnaire (MLHFQ) and depression measured by the Geriatric Depression Scale Short Form (GDS). (5, 6)

RESULTS

A total of 40 patients completed the program. The mean age was 66.4 years, 85% were male and the average number of months participating in the program was 16.6 (range = 12–24 months). A significant difference was noted in mean baseline to follow-up MLHFQ total score as well as the physical and emotional component scores within the questionnaire. (Table 2) There were also significant improvements in mean body weight, systolic blood pressure, GDS scores and minutes of exercise per week over the course of the program.

TABLE 2 - QUALITY OF LIFE, CLINICAL AND EXERCISE OUTCOMES FOR PATIENTS PARTICIPATING IN THE HEART FAILURE PROJECT

	Baseline	Follow-up
	Mean (SD) (min – max)	Mean (SD) (min – max)
QUALITY OF LIFE		
Minnesota Living With Heart Failure Questionnaire	51.1 (24.8) [0 – 92]	23.5* (20.2) [0 – 72]
Physical	21.1 (9.8) [0 – 38]	8.3* (6.8) [0 – 24]
Emotional	11.1 (6.8) [0 – 24]	5.3* (6.3) [0 – 20]
CLINICAL		
Blood pressure		
Systolic	120.7 (19.1) [80 – 162]	109.6* (18.3) [84 – 170]
Diastolic	67.9 (11.4) [48 – 98]	63.9 (10.9) [42 – 98]
Weight (pounds)	229.8 (69.7) [160 – 520]	220.8* (57.3) [148 – 442]
Geriatric Depression Screen	5.4 [1 - 13]	2.9* [0 - 10]
EXERCISE		
Minutes of exercise per week	26.7 (38.1) [0 – 150]	167.4* (81.9) [80 – 450]

*P-value < 0.05

CONCLUSION

This study provides evidence that a long-term or maintenance CR model, which combines exercise therapy, social support and education, has a significant impact on HF patients' physical and emotional well-being. Programs need to explore creative ways to serve this growing population in order to provide the ever growing number of HF patients with a safe and effective adjunct therapy in the management of HF.

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