

Improving self-efficacy of heart failure patients with
low health literacy by providing nutritional infographics

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Abstract

Heart failure (HF) is considered one of the costliest health epidemics in the U.S. Research has shown that there is a direct correlation between health literacy, HF knowledge and overall health outcomes. Approximately one in three Medicare patients have low health literacy. The population chosen for this project were enrolled in a program called, PACE (program of all-inclusive care of the elderly). The program supports frail Medicare and Medicaid patients living independently in the community.

The objective of this project was to evaluate the effectiveness of providing individuals with low health literacy infographics to help improve their self-efficacy and management of their HF.

Instruments used included the Self-Efficacy for Managing Chronic Disease (SEMCD) 6-item Scale and UR What U Eat. The latter tool is a color-coded infographic depicting sodium content in food using green for 'go', or little to no sodium content, yellow for 'slow', or low to medium sodium content and red for 'whoa, which indicates that the food is very high in sodium.

This pilot project used an experimental design which involved a pre and post self-efficacy evaluation survey, weekly weight tracking and weekly coaching. Data were analyzed using a paired sample t-test. Results suggest that providing nutritional infographics to participants and weekly weight monitoring led to a significant improvement in their self-efficacy and ability to manage their heart failure. Increasing self-efficacy can lead to improved health outcomes, patient satisfaction and a reduction in hospital admissions.

Keywords: Congestive Heart Failure, Low Health Literacy, Self-Efficacy, Nutritional Infographics

Background

Managing chronic diseases, such as HF requires complex self-care regimens and adequate health literacy. “Any health literacy level that is less than adequate” is a large contributor to the high mortality rate of HF patients (Grif Alspach, 2015). It is estimated that one in three Medicare patients have low health literacy (Peterson, 2011). The population that this project focused on belong to a program funded by Medicare and Medicaid called PACE (Program of All-Inclusive Care for the Elderly). A large portion of this population also have chronic diseases. Managing chronic diseases, such as HF, in this population is particularly challenging because a large number of them have low health literacy and high co-morbidities, HF being one of them.

Health Literacy is defined as, “the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions” (Cajita, 2016, p. 2). According to the National Assessment of Adult Literacy, approximately 1/3, or 80 million adults in the United States have limited health literacy (Cajita, 2016). Low literacy, and specifically low health literacy, makes managing chronic diseases challenging due to an individual’s limited ability to understand and comprehend their disease and treatment plan.

The literature identifies that knowledge and self-care are identified as important in order to have desired health outcomes (Chen, 2014, Peterson, 2011). Although there are relationships between health literacy, heart failure knowledge, self-efficacy, and self-care adherence; self-efficacy is what is needed in order to maintain adherence to self-management of heart failure (Chen et al., 2014). There is an identified high incidence of HF readmissions and therefore providing patients with continued HF education and assisting them with enhancing their self-care

abilities and expanding their knowledge can lead to improved quality of life and improved overall outcomes (Ekong, 2016).

Identifying high-risk populations in order to improve health outcomes allows health care professionals the opportunity to provide additional assistance and education that takes both health literacy and cognition into consideration. The difficulty is that although there are many different materials available, on average, they are written at an unsuitable level. It is recommended that print materials for patient education be written at a fifth-grade level or below (Jacob et al., 2016). Most of the health literature available is either written at a higher than average literacy level or not available in another format such as pictures (Taylor-Clark, 2012).

The objective of this project was to evaluate the effectiveness of providing nutritional infographics to individuals diagnosed with HF in the PACE program to improve their self-efficacy and management of HF. PACE is a Medicare and Medicaid funded program designed to help older adults meet their health care needs by providing them with a wide range of medical, social, recreation and wellness services in order to keep them living independently in the community as long as it is safe to do so (Medicare.gov). The majority of participants are low income, have low health literacy and have multiple co-morbidities. PACE is a model of care that uses a team approach to manage and coordinate care for elders by providing participants with an entire team of clinical and social service providers that collectively manage their healthcare (Elementcare.org).

The H2H initiative has a “goal of reducing 30-day readmission rates for heart failure patients” (Wiggins et al., 2013, p. 558). The author concluded that with education enhancement, health literacy can be improved to achieve medication compliance and self-care resulting in better health outcomes and subsequently reduced hospital readmissions (Wiggins et al., 2013).

Unfortunately, a large majority of this population is unable to read and comprehend all of the educational materials available to them and therefore are unable to fully understand their disease and be proficient in self-management.

Methods

This was a small pilot project that used an infographic to educate and coach individuals with HF to improve self-efficacy and HF outcomes. The infographic utilized colors and pictures to illustrate dietary choices and was written at a 5th grade reading level.

Sample and Setting

The project utilized convenience sampling. Participants were identified by running a report of all registered participants in a PACE program located in the Northeast who had a current diagnosis of heart failure. Exclusion criteria was non-English speaking individuals or inability to give consent due to having activation of a health care proxy.

After informed consent and exclusion/inclusion criteria was met, there were 14 participants that completed the study; 6 women and 8 men. The average age of participants was 71.07 years with a range of 57-86 years old. Out of the 14 participants, 12 reported the ability to read and write and 2 stated they were unable to read or write. The education level of participants ranged from 5th grade to master's level. The majority, 10 participants, reported completing a high school level of education, 2 completed 5th-8th grade, one held an associate degree and one held a master's degree.

Measures

Self-Efficacy for Managing Chronic Diseases 6-item Scale (SEMCD)

Self-Efficacy for Managing Chronic Disease six-item Scale (SEMCD) was used to measure participants self-efficacy in this project. It is a valid and reliable tool which is free to use

without permission (Ritter, 2014). It measures confidence in an individual's ability to perform activities based on their chronic disease. This tool is based on Albert Bandura's self-efficacy theory. The theory states that self-efficacy is an important predictor of an individual's future behavior (Ritter, 2014). A score of 1 indicated that the individual was "not confident at all" and a score of 10 indicated that they were "totally confident". The authors reported reliability with a Chronbach's alpha score of 0.91. The survey was completed with assistance from the investigator.

Intervention

The SEMCD 6-item scale was administered at the initiation of the study. Participants were provided with an English nutritional infographic they could use while shopping, cooking or to help make healthy food choices. It was a color chart created by the US Department of Health and Human Services and taken from a 4th grade curriculum (U.S. DHHS, 2002). The infographic shows pictures of foods sorted into three categories; Green for 'go', yellow for 'slow' and red for 'whoa'. Each category indicates the level of sodium in the food. Green indicates no or low sodium, yellow is moderate sodium and red indicates that there is a large amount of sodium in the food and it should be avoided.

Throughout the 6-week period, participants were weighed weekly and infographics were also reviewed weekly with the participant to determine how they were managing the use of the infographic. Weekly coaching consisted of meeting with the participant during their days at the adult day center. Participants were asked if they were using the infographics and if they felt they were helpful. Many of them felt that they already did a good job managing their HF while others felt that the infographics were very helpful. A small number of participants reported using them on a daily basis with cooking, shopping and food choices. At the end of the six-week period, the

SEMCD 6-item scale was administered again. The results of their pre and post intervention scores as well as their weight measurements were calculated and compared to evaluate for effectiveness of the intervention.

Results

A paired-samples t-test was conducted using SPSS v26 to compare self-efficacy scores pre and post intervention. There was a statically significant difference $p = 0.025$ between pre and post survey scores. The mean pre-score on the SEMCD scale was 6.33 and the mean post-score increased to 7.15. Analysis of the data shows that there was a 13% increase in participants self-efficacy of their management of their heart failure with the use of infographics.

Weights were also tracked throughout the 6-week period. In general, participants maintained their weight within 1-5 pounds. There were two outliers in the sample. One participant had a weight gain of 10.8 pounds, and another had a weight loss of 11.6 pounds. Both participants had medical complications causing the fluctuation in weights. These medical complications were not a result of heart failure.

Discussion

This project was aimed at identifying tools that can be used with an older adult population to improve their self-efficacy and reduce complications from their heart failure. By providing them with nutritional infographics that are written at the recommended reading level of fifth grade, and can also be interpreted without needing to read, participants were able to improve their self-efficacy and understanding of how to better care for their HF. Research has identified a direct correlation between higher health literacy, HF knowledge, and overall health outcomes.

Limited health literacy has become a serious problem in the United States. Simple interventions and measures designed to help deliver health information to patients is critical for clinicians. It is also equally as important for clinicians to be able to assess a patient's knowledge about HF and their ability to successfully perform self-care behaviors to manage their HF. With improved self-efficacy, individuals will gain a greater ability to care for themselves and achieve a better overall health status.

The simple intervention used in this project was designed to improve individuals' self-efficacy and ability to manage their heart failure. Nutritional infographics were reported as effective in helping participants make heart healthy food choices and better control their heart disease. This intervention also show that by providing nutritional infographics to low health literacy individuals with HF it can help to improve their self-efficacy and management of their heart disease.

"Medicare participants have the highest readmission rate with 44% 6-month all cause readmission rates with 18% being due to CHF" (Chamberlain, 2018). Supporting Medicare participants in managing HF is critical. The literature reports health literacy as a growing problem; health care professionals must develop strategies to improve outcomes for low literacy individuals. Overall there was benefit to the intervention performed as evidenced by a statically significant improvement in self-efficacy scores between pre and post intervention. Increasing self-efficacy helps to improve patient's health therefore reducing hospital admissions and leading to greater patient satisfaction and overall health outcomes.

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